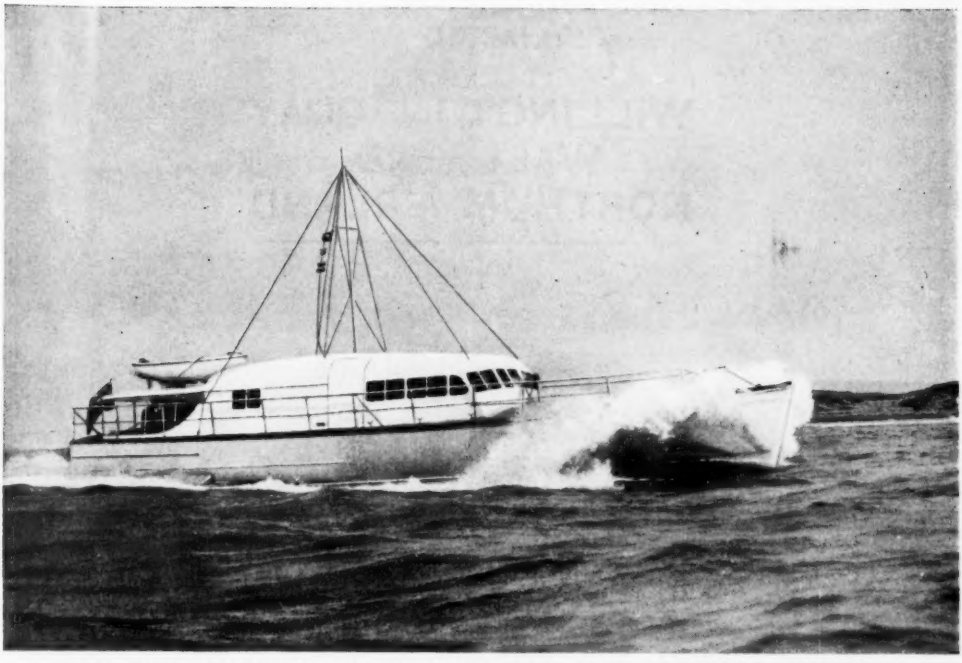
The
# SHIPPING WORLD
AND SHIPBUILDING & MARINE ENGINEERING NEWS

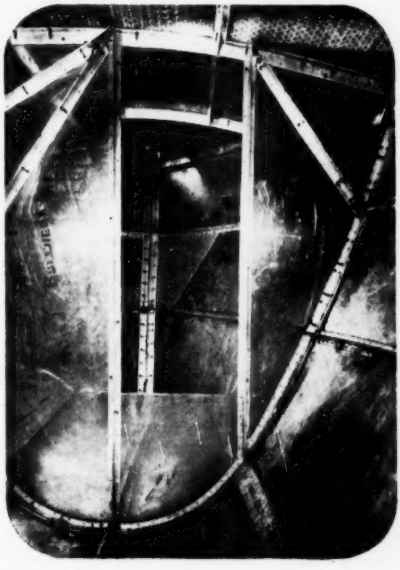
VOL. CXXV No. 3027 WEDNESDAY, JULY 4, 1951 Price 1/6

# Aluminium for New-Type Survey Launch



*(Above) The "Ain-Al-Bahr" built by Messrs. Grimston Astor Ltd., for the Pakistan Government. (Below) Looking forward during building.*

Built for surveying shallow estuaries in East Pakistan, the all-aluminium " Ain-Al-Bahr ", a 60 ft. twin-screw survey launch, has a displacement of 11 tons and a draught of only 2 ft. 9 in. On a power of less than 130 b.h.p. the vessel exceeded 13 knots on her trials, and has an endurance of 1,500 miles. Apart from effecting remarkable operating economies and reducing the draught to a minimum, aluminium requires little maintenance even in the tropics and is unaffected by teredo worm. The aluminium plate, sheet and extruded sections were supplied by The British Aluminium Company who co-operated with the builders on certain technical aspects.



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# The SHIPPING WORLD

AND SHIPBUILDING & MARINE ENGINEERING NEWS

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**Vol. CXXV.** **WEDNESDAY, JULY 4, 1951** **No. 3027**

# *"The Price of Peace . . ."*

Mr. H. T. N. Gaitskell, Chancellor of the Exchequer, introducing his 1951 Budget

# BUDGET COMPARISONS

Revenue from Three Peace Budgets
**(ESTIMATED)**

| | **1914** (Mr. Lloyd George) | **1939** (Sir John Simon) | **1951** (Mr. Gaitskell) |
|---|---|---|---|
| | £ | £ | £ |
| **Tea . . .** | 6,498,816 | 10,867,192 | 50,000,000 |
| **Sugar . .** | 3,272,044 | 11,475,705 | 13,300,000 |
| **Tobacco .** | 18,263,479 | 84,043,441 | 600,000,000 |
| **Spirits . .** | 4,435,500 | 4,769,033 | 30,000,000 |
| **Beer . . .** | 13,622,971 | 62,370,034 | 250,000,000 |

THE SHIPPING WORLD

# THE INTERNATIONAL CONFERENCE OF NAVAL ARCHITECTS

THE meetings between the naval architects and marine engineers of 14 countries which took place in London last week, and which are continuing in Glasgow and Newcastle during the present week, are of considerable technical importance as well as providing excellent opportunities for delegates from other countries to see Britain during the Festival year. This is not the place to discuss the propriety of holding a festival in the conditions which prevail; it may suffice to say that this country is putting on a brave show, and one which, from the comments made last week by our visitors, is much appreciated. The fact that shipbuilders and engineers of so many lands can meet together in this way is itself of considerable significance, as may be seen by examining the old volumes of the various shipping journals. International cooperation on technical matters and the free exchange of information on design and construction were not always so evident as they are today. THE SHIPPING WORLD made its first appearance nearly 70 years ago, at a time when many shipbuilders in this country, and most of those abroad, frowned on any request to publish drawings and technical particulars of the vessels they completed. Shipowners, too, were most reluctant to let the world see the kinds of ships they considered, based on their own experience, as best fitting their trades. International cooperation was at a very early stage, though the Institution of Naval Architects was already 23 years old when THE SHIPPING WORLD first began to chronicle the activities of the British maritime industries. It is natural, therefore, that for the first few years reports on progress made in Britain in shipbuilding and marine engineering predominated, though it is interesting to note that a good deal of information was forthcoming from the United States in those early days.

Now, as shown during the present Conference, the position has changed. There is a great measure of freedom in publishing technical data, and the papers read or still to be read include some by British, American, French, Dutch and Swedish authors. This is an excellent trend. No nation ever remained a power in any industry by virtue of secrecy; the criteria for success have always been and will remain those of native ability, determination, ingenuity and forwardness in outlook. At a time when the maritime nations of the world must agree on such measures as freeboard and subdivision regulations, lifesaving appliances, systems of tonnage measurement and many other technical matters, the need for cooperation between these nations is important, and the progress made towards this end owes not a little to the liberal outlook taken by past presidents and members of Council of the four British institutions now acting as hosts to our foreign visitors.

Perhaps this may be a good moment to suggest that cooperation of this kind might go further, with benefit to all, in the training of young naval architects and marine engineers. The fatal attitude is that of believing, because one lives and works in, say, Utopia, that Utopian methods of building ships and engines are and always will be by national law the best. The cure for any such belief is to send the young Utopian to visit and, for a time, work in the yards and engine shops of other countries. It can be both a sobering and inspiring experience and one which does not encourage complacency, the enemy of progress. Is it impossible, now that so many countries are represented in Britain, to prepare a training scheme in which selected members of both office and works staffs would be exchanged, as part of their education? The lessons learned would not be limited to those concerned with shipbuilding and engineering but also on the important matter of living in a world which contains other peoples. It has been a matter for the keenest regret that ill health has prevented Admiral of the Fleet Viscount Cunningham from acting as chairman during this, the last year of his term of office as president of the Institution of Naval Architects. The Institution and the conference as a whole, are to be congratulated, however, in the choice of Viscount Runciman, president elect, as chairman of the meetings in London.

# Current Events

## "Ships and Boats"

SHIPOWNERS are less interested in the value than the volume of our exports and imports. The fact is that in May the former decreased by 2 per cent compared with the figure for the preceding month. On the other hand, the volume of imports was 6 per cent higher than in April. Owing to price movements, the adverse balance on our visible trade continues to rise; during the first five months of this year it amounted to no less than £403,600,000, a matter that may well give the President of the Board of Trade and the Chancellor of the Exchequer anxiety, for the gap is getting bigger. The trade picture would be even more depressing if it had not been for the satisfactory record of the maritime industries. In May the exports of ships and boats reached a very high level—£8.9 million compared with only £2.5 million in April, and an average of £3.5 million in the first three months of the year. As the *Financial Times*, an impartial authority, remarked, "Without this increase of over £6 million, the export total for the month would have been about 3 per cent below the April level, largely as a result

of a fall of £5.9 million to £47.8 million from the high figure of exports of textile yarns and manufactures recorded during April". Recent Chancellors of the Exchequer have awakened to the importance to the national economy of the invisible exports of the shipping industry, now running at considerably over £100,000,000 per annum, but little has ever been heard of the contribution which is made by the other maritime industries in the form of "ships and boats". Among the various groups of industries in this country, those concerned with the building, equipment and operation of merchant ships rank high in maintaining our balance of payments in a more healthy, or perhaps it should be said less sickly, condition than would otherwise be the case. And, fortunately for every man, woman and child suffering from the asperities of Socialism, there is every reason to believe that the maritime industries will remain to the limit of vision big contributors on the right side of the national trading account. Private industry is, in fact, bearing the heavy burden resulting from the nationalisation of the basic industries.

## Tanker Hold-up at Abadan

THE CONSEQUENCES of mob rule in Persia will in no long time be felt not only in this country, but in all countries in the East as well as the West which have relied on the regular supplies which the Anglo-Iranian Oil Company provided for them. The Persian Government has proceeded from one folly to another, the latest being the insistence on receipts being given by masters to the new Government organisations, and the threat of a law against "sabotage." A few days ago it was reported from Abadan that shipping was at a standstill with about 60 tankers held up and thousands of tons of spirit being diverted to storage on land, while demurrage charges alone were being incurred to the amount of about £20,000 a day. This hold-up is due, of course, to the continued refusal of the ships' masters to sign Persian nationalised oil receipts for the cargoes. No more tankers are being loaded until the masters have presented themselves to the office of the new "oil board" to specify the tonnage and grade of oil required. The correspondent of the *Daily Telegraph* reported that the ships involved in the greatest congestion seen at this port included ten at the jetty, mostly loaded, and up to 35 hours overdue to sail; five in the creek awaiting berths; and 15 at the bar. Still more tankers were approaching at a rate of six a day. The ships, for the most part, belong to the British Tanker Company, a subsidiary of the Anglo-Iranian Company, but there are also Norwegian and American vessels. At the crude oil-loading port of Bandar Mashur, 60 miles east of Abadan, three more tankers were awaiting clearance papers on the same day. This interference with the shipment of much needed oil is the most tragic incident in the industrial history of the world because, unless the Persian Government relents, suffering will be caused to millions of people whose livelihood depends on Persian oil. The misguided autocrats relied on trade jealousy leading the American oil companies to ease the situation, but, to their surprise, the Americans are not prepared to play such a dirty game.

## The Steel Muddle

STAGE by stage, now that the nationalisation scheme for steel is being put into operation, the most admirably devised organisation for manufacture, sale and distribution which has ever existed in this country is being broken up. The Iron & Steel Federation has shown statesmanship and patience in dealing with the difficult and, so far as the nation is concerned, perilous situation which the House of Commons in its ignorance has created. The new national authority has tried to put spanners in the machine so as to be able to charge the Federation with what might be described as sabotage. In fact, it is acting very much as the mob-harassed Persian Government is acting. The Minister of Supply has brought obviously unfounded charges against this well conducted body under whose auspices the official targets of production have been repeatedly beaten. It is exercising relentlessly its monopolistic powers in a manner which must react on the efficiency of an industry which is essential to the rearmament movement. It is unnecessary to go into details, as they have been published day by day. The object is to cripple the Federation. That is apparent. The latest decision of the Corporation is to exercise its option to acquire the three Sheffield steel firms of William Jessop & Sons, Ltd., J. J. Saville & Co., Ltd., and Bromley, Fisher & Turton, Ltd., owned by the Birmingham Small Arms group. It is estimated unofficially that the Government will have to pay about £5 million for the three firms which between them employ about 3,000 workers. Jessop's and Saville's produce high-grade steels and heavy crankshafts for aircraft, and marine engines. Bromley, Fisher & Turton manufacture files and steel. The chairman of the B.S.A. Company made the appropriate comment on this action by the Corporation that "nationalisation of anything meant an immediate increase in price" and he could see no reason for supposing that steel would be an exception. The British Government is protesting against the Persian Government acting in an arbitrary way at this moment. What will the Persians think when they learn what is happening in these islands?

## America's Largest Ship

THE HISTORY of trans-Atlantic passenger liners has passed another stage with the "launching" of the *United States* by the Newport News Shipbuilding & Dry Dock Company. As this vessel was built in a dry dock, the christening ceremony was performed without the excitement and thrill of seeing the great hull slide down the ways into its natural element. With a length of 990 feet overall, and a gross tonnage of about 51,500 tons, the *United States* will not be the largest ship on the North Atlantic, but it is claimed that she will certainly rival in speed, if not outstrip, the giant Cunarders *Queen Mary* and *Queen Elizabeth*, when she enters into competition with them next year. Although she will be operated by the United States Lines, whose flagship *America* is well known on the North Atlantic, the *United States* has been paid for largely by the American taxpayer, and from the outset her design has been considered with a view to her eventual use as a troopship. For this reason, for example, her beam has been restricted to 100 ft. 6 in., so that she can pass through the Panama Canal, and it is estimated that defence features incorporated into her design have accounted for more than one-third of her total cost—over $70,000,000. Her quadruple-screw geared steam turbines have been designed for extra speed and long cruising range, and she has been afforded special hull protection, and navigation aids and fire-control systems, the details of which, for security reasons, cannot be released. It is stated that the subdivision of the hull closely approaches the standard of a large combatant warship, a standard unprecedented for a merchant ship. Particular attention has been paid to making the vessel fireproof, and it is claimed that she is constructed entirely of fireproof material, there being little or no wood in the ship except in the pianos and the tops of the butcher's chopping blocks. A notable feature is the extensive use of aluminium, of which more has gone into this vessel than into any single structure on land or sea. Naval architects and shipbuilders on this side of the Atlantic will be eager to see how Mr. W. F. Gibbs, the architect of the *United States*, has dealt with the problem of satisfying the strategic and the commercial requirements.

## The Value of Publicity

THE silver jubilee of the foundation of the Honourable Company of Master Mariners, which occurred on June 25, was marked by a dinner held by the Company at the Mansion House. Speaking at the dinner, the Master, Air Chief Marshal Sir Frederick Bowhill,

remarked that there appeared to be a tendency to be complacent about the Merchant Navy, and far too often it was taken for granted. He was quick to point out the possible advantages of being taken for granted, in that to be left alone to carry on one's work without interference was a great compliment, but he also pointed out that a complacent attitude could harbour a danger. From complacence to indifference, and hence to neglect, could be a short step. He suggested three lines of action which would help to avert this. These were to keep before the nation the vital work done by the Merchant Navy and what it meant to the people; the necessity of having a well run and contented service; and the need for the nation to send its best to man its great sea service. Not unnaturally, Sir Frederick was speaking from the point of view of the Merchant Navy officer, but his words are equally applicable in the general field of shipowning. Publicity can be overdone, and few will disagree that in the United States, for example, this is often the case. Nevertheless, the day is past when secrecy and public ignorance of its work could be considered an asset to any business. Where there is general ignorance, the medium of democratic government offers too many opportunities to those who would destroy. A policy, steadily maintained, of keeping the facts (and the figures) before the public can be of great assistance to any industry, and shipowning is no exception.

## Clan Line Scheme

THE further details now published of the Clan Line reorganisation scheme have pleased the City and should satisfy stockholders. The intention of the plan is that part of the earnings of subsidiaries shall pass directly to stockholders of the parent concern by way of a special distribution from capital reserves. It is therefore recommended that there shall be distributed among the ordinary stockholders of Clan Line 600,000 fully paid 5s. shares in Sea Lion Investments and 600,000 fully paid 10s. shares in Scottish Lion Insurance. Sea Lion was recently registered by Clan and will make an issue of 3,400,000 5s. shares, of which 40,000 will be made over to Clan for cash at par and 3,360,000 will be issued as purchase consideration for a 46 per cent holding in the Greenock Dockyard Company and for an entire interest in the share capitals of Dock Services, Ltd., and of the Caledonia Stevedoring Co., Ltd. The Greenock Dockyard shares to be taken over are in the ownership of Clan, the Caledonia Stevedoring shares are held by Caledonia Investments and the shares of Dock Services are owned as to 75 per cent by Caledonia Investments and as to the balance by Cayzer Irvine. The latter is now a subsidiary of the Clan Line. The interests taken over by Sea Lion Investments will be co-ordinated by that company and form a sound maritime portfolio. Of its 3,400,000 issued shares, 1,880,000 in all will be held by Clan Line—the proposed distribution will come from their holding—1,340,000 by Caledonia Stevedoring and 180,000 by Cayzer Irvine. As already announced, the dividends payable by Sea Lion Investments and Scottish Lion Insurance will, in a full year, yield sufficient to give Clan Line stockholders an additional 5 per cent, less tax, on their holdings. Presumably the two companies will be made public so that their shares will become a marketable commodity. The scheme is ingenious and somewhat complicated, but it is an attractive proposition.

## British and American Maritime Law

MORE than once, judges in the American courts have expressed the view that in cases where no definite American precedent exists, American maritime law should follow British law. This aspect of the situation figured to a large extent in the case of the *John Worthington*, recently decided in the Supreme Court of the United States. The question was whether the owners of the *John Worthington* were entitled to compensation for damage incurred in collision with a U.S. minesweeper under an indemnity given by the U.S. Government against loss, damage, or expense excluded from the ordinary marine insurance policy by the "Free of Capture" clause. In the court of first instance, the case was decided for the *John Worthington*, but this decision was reversed on appeal, the reversal being confirmed by the Supreme Court by a majority judgment. Basically the decision of the Supreme Court was that on the facts, which were capable of different interpretations, the decision of the court of appeal must stand. It had been argued, however, that on the doctrine that American law should conform with British precedent, the cause of the loss would have been that it had been incurred owing to a "warlike operation." It was admitted that American courts had emphasised the desirability of uniformity in decisions in America and England, but the Supreme Court held that actually American practice was no more than to accord respect to established English doctrines, and that the Court could not be sure what conclusion the House of Lords would have come to had the case under consideration been submitted to it. That left the American courts to fall back on the doctrine of "proximate cause," long experience with which had proved it to be adaptable and useful in marine and other insurance cases. There was no reason to believe that its application in the present case would disappoint the expectation of insurer or assured. Three of the nine judges who heard the case dissented, one of them on the grounds that English cases should be followed. It is, undoubtedly, desirable that in principle American and British maritime law should be uniform, but in the case under consideration the circumstances were those in which, as the Supreme Court held, the particular English cases relied on produced an unfavourable reaction among English underwriters. It is gratifying to find that, while admitting the general principle, the Supreme Court of the United States refused to follow British precedent slavishly.

## A Numerous Class

SPEAKING at the launch of the British India liner *Chakdara* from his yard, Mr. George Barrie, chairman of Barclay, Curle & Co., Ltd., mentioned that the ship was the eighth vessel of her owners' "C" class that the yard had built. The first was the *Canara*, laid down in 1941. She and the *Chyebassa* were completed in 1942, and were followed by two more in 1944, two in 1949, and one in 1950. Mr. Barrie congratulated the British India Company on starting on the replacement of its war losses as soon as the regulations permitted, and said that it would be difficult to assess the full financial advantage to the company resulting from this decision. As far as the cost of construction of the ships was concerned, he judged that the saving on the ships built by Barclay, Curle's could not be less than 15 per cent, and might be much more. Although naturally varying as to the exact figures, the "C" class B.I. liners have a gross tonnage of about 7,500, and a deadweight tonnage of just under 10,000. They are open shelterdeckers with five holds, an upper tweendeck throughout all holds and a lower tweendeck ending after No. 4 hold. They are single-screw motorships, with a six-cylinder Doxford-type engine developing 6,800 b.p. under service conditions to give them a speed of 14½ knots. A further ship of the class, the *Chinkoa*, is to be laid down on the berth vacated by the *Chakdara* at Barclay, Curle's, while another four are being built by the parent firm of Swan, Hunter & Wigham Richardson, Ltd., of which two have been completed. There are thus 13 of these ships built or building for the British India Line, while a further four have been built by Barclay, Curle to this design for other companies in the P. & O. group. Altogether they are a numerous class.

## Electricity in Shipbuilding

MR. H. H. MULLENS, chairman of the North Eastern Electricity Board, read a paper entitled "Electricity as a National Asset" recently at the third British Electrical Power Convention in which he referred to

industries in which the efficiency and output had been greatly increased by electrification. In common with other industries, Mr. Mullens said, shipbuilding and shiprepairing yards made considerable use of electricity to provide motive power for operating cranes, and for driving punching, shearing and drilling machines and woodworking machinery, but in recent years the most rapid growth in the use of electricity had unquestionably been for welding. The first all-welded ship was built in 1920, and since that time welding processes had so developed that in the average class of cargo vessel now being built about 75 per cent of the construction was welded. A diagram in Mr. Mullen's paper showed graphically that the consumption of electricity during the past 15 years at a shipyard which was highly mechanised and had adopted welding extensively, had increased from 6½ to 16 million units per annum. High-class passenger and cargo vessels were built at this yard. The electricity consumption per ton of shipping launched had risen, during the same period, from 186 to 284 units per ton. While this rapid growth was due largely to increased use of welding, there had also been a greater use of electricity for the driving of modern machinery and for better lighting. That these improvements had contributed towards high outputs was well illustrated by the increased tonnage of shipping produced per employee.

## Government Ships for Iron Ore

SOME LIGHT has now been thrown on the obscure reference to shipping made by Mr. Richard Stokes, the Lord Privy Seal, on his visit to Washington some weeks ago to consult with the United States Government on the question of raw materials allocation. It now appears that he requested the U.S. Government to instruct the new National Shipping Authority to make certain vessels, operated by general agents on behalf of the Authority, available for the transport of iron ore to the United Kingdom. About eight or nine vessels, it is reported, which are carrying E.C.A. cargoes to Mediterranean ports, are to bring iron ore to British ports. The freight rates agreed, it is reported, are to be paid in dollars, but they will be some 10s. below the prevailing market rate. A spokesman in Washington has suggested that this lower rate was accepted because the British Iron & Steel Corporation will be liable for all loading and discharging costs. This is the first occasion on which vessels brought into service by the U.S. National Shipping Authority have engaged in all-foreign voyages, although another voyage recently reported is from Rotterdam to Formosa with a cargo of fertiliser. In addition, the Authority's ships have loaded iron ore for American ports at Narvik and Monrovia at rates reported as $4.25 and $6 respectively. Further sailings from these ports to Baltimore or Philadelphia are being arranged. So long as defence requirements exceed the supply of normal commercial shipping, little objection can be taken to this emergency relief in respect of ore cargoes, but a dangerous precedent has been set of American Government-owned shipping participating in commercial voyages. Its development must be closely watched for any signs of it being used to discriminate against privately-owned shipping or influence the normal function of the international freight market.

## Fire Protection in Ships

AS SOON as the findings of the 1948 international conference on safety of life at sea became known it was realised that the new regulations regarding fire resistance might have considerable effect on the design of future passenger ships. This has proved to be the case, and up to the present the practice adopted in Britain and the United States of America has, in general, differed. There are three alternatives provided in the new international regulations for fire protection. The first requires the use of fire resisting materials for the construction of the ship and for all internal structure and linings throughout the passenger and crew accommodation. The second requires a sprinkler system throughout the accommodation, with a fire detection and indicating system. The third alternative is a limited application of the first in that it requires accommodation to be divided into zones of small area, with the boundary walls of the zones being of fire-resisting construction. This alternative is in association with a fire indication system. Most large American ships are built to the first alternative, the amount of wood and combustible material in the passenger spaces being negligible. On the other hand, most large British passenger ships are arranged with the second alternative, though also having, in common with all three systems, main fire-resistant bulkheads at every 131 ft. throughout the accommodation. There can be little doubt that the British practice has proved satisfactory in service, the principal type of sprinkler system fitted being most efficient. On the other hand, however, the system is in the long run only as efficient as it is maintained by the officers and crew concerned and it must be noted that the only serious fires in British vessels in recent years have been those taking place when the ships have been in dock or at repair or fitting-out yards. While fires of this kind are perhaps outside the scope of measures concerned with, as the title of the 1908 Conference stated, safety of life at sea, it must be realised that if one of the three alternatives gives protection both at sea and in port, the prudent shipowner will adopt that measure or measures accordingly.

## Incombustible Joiner Materials

ONE of the reasons why the first and third alternatives for fire protection in ships have not hitherto found much favour with British owners has been the absence, or certainly the lack of general acceptance, of an incombustible joiner material capable of the high finish desired in passenger spaces. American shipowners and builders have not suffered from this disadvantage, as for some 10 years a product known generally as "Marinite" has been available and in fact has been fitted in every recent American passenger ships. A recent example was the use of these materials in the liner *Independence*, described in some detail in the May issue of WORLD SHIPBUILDING. It has now been announced that a company has been formed to produce Marinite materials in the United Kingdom, as referred to elsewhere in these pages, and shipowners and builders generally will watch with interest the first stages of the progress made in the adoption of these interesting materials in British ships. The product is principally comprised of asbestos fibre with an inorganic binder, and has been designed primarily for use as a divisional bulkhead, though also available as linings, while associated products cover a wide field of fibre protection and heat and sound insulation. The interesting feature of this development is that under the present safety regulations, it is possible to use almost any of the several excellent materials now available for bulkhead panelling and linings; nothing is debarred by the regulations themselves, under one or other of the three main alternatives already mentioned. One can safely predict that as usual the palm will go to the materials which owners' and builders' experience prove to be best, but the competition is likely to be keen and perhaps of considerable duration. The net effect can only be progressively to provide better ships by virtue of this competition.

## SAYINGS OF THE WEEK

### "A DWINDLING BUSINESS"

"Coal, as a bunker fuel for ships, is unfortunately a dwindling business. Notwithstanding this, the difficulties surrounding the replenishment of our coaling stations abroad are severe and supplies have had to be obtained from such far distant coalfields as American and South African, since, due to the home demand for defence purposes, practically no coal is now available in this country for export." *Mr. R. Rattcliff*, chairman of Lambert Brothers, Ltd.

# ON THE "BALTIC"

## VARYING REGULATIONS FOR BULK GRAIN CARGOES

**By BALTRADER**

WHY do not all countries, even those least cooperative with the rest of the world, enforce the same regulations in respect of the safe loading of ships with bulk grain cargoes? As a matter of fact, the United Kingdom has not yet a complete and logical formula, although it has always been to the fore in devising and enforcing safety rules. On second thoughts, one cannot say that the British rules are always enforced, because the fines imposed for infringement are sometimes ridiculous. What deterrent is there to an owner willing to neglect the legal precautions if in event of punishment the fine may leave almost the whole of his unfair profit intact?

### Anomalies in Mediterranean Trade

An instance of the lack of universal application of safety rules is the obligation to fit shifting boards when loading bulk grain in the Mediterranean for the United Kingdom, but freedom from compulsion to do so if discharging on the Continent. This gives an unfair advantage to the Continental importers, who can obtain cheaper freight as they can draw on most of the tonnage available in the Mediterranean. There may, on the other hand, be few vessels in position which have grain fittings to meet the requirements of Great Britain. Vessels may perform the long voyage from the Far East to the Continent with bulk grain but without shifting boards, passing through a variety of latitudes subject to violent seasonal climatic disturbance. Unequal enforcement of regulations is to the detriment not only of those countries which insist on their being observed. It also penalises owners who, whatever may be the law in respect of a particular voyage, take the fullest care to secure cargo in order to satisfy their own standard of safety. It is also a matter which must be of concern to underwriters, and above all to the men who take the ships to sea.

It is understood that anomalies in the British system are under review and that for instance it may not in future be permissible to dispense with shifting boards when carrying grain in bulk from the Atlantic coast of Morocco to the United Kingdom. That voyage necessitates the crossing of the Bay of Biscay, in common with the passage from the Mediterranean to the same destination, for which grain fittings are compulsory. Similarly there seems to be no reason why the same regulation does not apply to vessels coming home from the River Plate with grain in bulk. Of course, in the case of British ships there is, in event of a casualty, the most strict inquiry as to whether all proper care has been taken to secure the cargo. This salutory measure in the interest of the crews and the underwriters ought to be applied with equal thoroughness in all countries.

### State of Markets

Some weakness has developed in most homeward freight markets, but not in the Baltic timber trade, which has still been active. Decline in demand has been less marked in the Western than in the Eastern Hemisphere. Time charter inquiry has been well maintained and rates of hire paid, though a little uneven, have been at an average level satisfactory to owners. Australian grain charters have been arranged at about 15s. less than the rates recently paid. Tonnage is inclined to accumulate in the East on account of frequent arrivals at Indian ports with food from America. Dairen is congested with ships loading for Europe or India and demand for further tonnage from that area is less than for some time; but there is a better inquiry from the opposite side of the Pacific on the part of grain and lumber charterers, and improved rates have been paid. The Mediterranean ore and phosphate charterers have satisfied most of their early requirements, leaving the field, for the time being, largely to the operators for pyrites from Huelva. There is, however, only a slight downward tendency in that market, which is not by any means swamped with tonnage, much of which is now being diverted to supply the needs of the Baltic timber season; handy and medium sized vessels are doing well. The prospects for large tonnage in the Mediterranean may be adversely affected by the expected chartering of a number of American Government-owned ships for iron ore from North Africa to the United Kingdom at rather more than 10s. below the current market rate.

### The Freight Markets

Business has been on a moderate scale in the freight markets during the past week, and in several directions rates are again easier inclined. An oil burner which was fixed for an Australian round voyage at 47s. 6d. per ton per month was sub-let for a grain cargo Full Range Australia to West Italy at the lower rate of 122s. 6d. and the *Montevideo*, 7,500 tons, was chartered for bagged flour or wheat from South Australia to Cyprus at 130s., August/September, a decline of about 20s. on previous business in this direction. In the Far East the *Asteris* has been fixed from North China to the Continent at 170s., basis Antwerp or Rotterdam discharge for August/September loading, a decline of 12s. 6d. Two vessels have also been taken by the Committee from North China to India for mixed cereals at the steady rate of 120s. with discharging options and with option of a full cargo of rice at 5s. extra. The North Pacific market, however, is slightly firmer, two August vessels being fixed for heavy grain to the United Kingdom at 152s. 6d., a rise of about 5s., and another to Alexandria at $22.00, a rise of 50 cents. Calcutta/Australia coal has also been fixed at 160s. and 155s., according to position. Time charter has been more active and fixtures include *Junecrest*, 9,960 tons d.w., 496,000 cu. ft. bale, 10-10½ knots on 21-22 tons fuel oil, 50s. per ton d.w., delivery Middlesbrough July/August, for one West African round; *Harpagon*, 10,864 tons d.w., 499,000 cu. ft. bale, 10 knots on 24 tons oil, 57s. 6d. per ton d.w., delivery Glasgow July, trip out Australia; *Nimaris*, 10,384 tons d.w., 475,000 cu. ft. bale, 10-10½ knots on 23-24 tons oil, 51s. 3d. per ton d.w., delivery London trip out East Africa.

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FIVE major Burmese ports, Akyab, Bassein, Mergui, Moulmein and Tavoy, are to be rebuilt and modernised under an extensive rehabilitation programme. Work is already under way on the rebuilding of Rangoon, Burma's principal port, for which 1,000,000 dollars (about £350,000) in E.C.A. funds was approved in February.

THE Tyne Improvement Commission has granted permission to Holloway Brothers (London), Ltd., to carry out temporary works in connection with the building of a new dry dock at North Shields for Smith's Dock Co., Ltd. The work will include the driving of timber staging piles, construction of an arch-type sheet piled cofferdam and the erection of two 10-tons and one 7-tons derrick cranes.

THE size and layout of *The Log*, the Furness, Withy house magazine, has been altered for the current issue to accommodate a coloured reproduction of the armorial bearings newly granted to the Economic Insurance Co., Ltd. The granting of this coat of arms marks the fiftieth year of this company, which was founded in 1901. In a foreword Sir Ernest Murrant, the chairman, writes: "From a small beginning of a purely domestic character, it has grown into a flourishing public company, with reserves amounting to three times its paid-up capital, and funds exceeding £3,000,000."

# COAL AND OIL

## NEW UNIT UNDER CONSTRUCTION AT STANLOW

THE SECOND distillation unit at the Shell Stanlow refinery is now in operation, nearly a month ahead of schedule. This trebles the plant's capacity, bringing it to over 3 million tons a year. The refinery, which first came on stream in November 1949, is due for completion in January 1952. In addition to producing a comprehensive range of petroleum products, including high quality petrol, gas oil, fuel oil, synthetic detergents and chemical solvents, it will also make full use of its refinery gases as raw materials for its own large chemicals-from-petroleum industry. Five further units are yet to be completed. These installations will permit a variation in the output of refined products to suit market demands. Recently, what is believed to be the biggest lifting operation of its kind in the U.K. was successfully carried out at Stanlow. A welded steel absorber column (weight 240 tons; length 170 feet; diameter approximately 10 feet) was raised to vertical by huge gantries specially designed for the task. The new extensions at Stanlow form part of a £30 million postwar refinery expansion programme that Shell has undertaken in the U.K. This includes Stanlow's complementary refinery at Shell Haven, Essex, which is already in full operation, with a capacity of over 2 million tons a year, and a plant at Heysham, Lancs, with a capacity of over 1½ million tons per annum. Another related project is at Pernis, near Rotterdam, Holland, where the refinery's capacity has recently been enlarged, enabling it to process over 4 million tons a year. These four refineries—Pernis, Shell Haven, Stanlow and Heysham—are located to feed the Northern European market in the most economical way. Taking into account the refineries in France, Germany and Italy, Shell is the largest refinery operator in Western Europe, with a total annual capacity of some 20 million tons.

### New Chairman of Esso Petroleum

THE DIRECTORS of Esso Petroleum Co., Ltd., have announced that Mr. Leonard Sinclair has been elected chairman and managing director in succession to the late Mr. R. A. Carder. Mr. Sinclair, who is 56, has served with the company since 1908 when, at the age of 13, he joined the company's Manchester office as a clerk. In 1943 he was appointed a director, and was made a managing director in 1949. Mr. W. E. Jenkins and Mr. N. F. Myers have been appointed managing directors, and Mr. H. C. Tett has been appointed a director. Mr. W. E. Jenkins joined the company in 1920 and was appointed a director in 1945. He was awarded the C.B.E. in 1949 for his services as Controller of the Finance and Accounts Division of the Petroleum Board during the late war. Mr. N. F. Myers is an American and a graduate of the Massachusetts Institute of Technology. He was appointed a director in 1950 and is primarily concerned with the construction and operation of the new Esso refinery at Fawley, near Southampton, due to commence production in the late summer. Mr. H. C. Tett was managing director of Esso Development Company before being appointed general sales manager of Esso Petroleum Company in 1949. Simultaneously with these appointments, it is announced that to administer the broad policy of the company's expanding activities in British oil refining and marketing, an executive committee has been formed. Its members will comprise the chairman, the managing directors, and one of the other directors who will serve on a rotational basis.

### Shorter Items

BELIEVED to be the first floating filling station of its kind, the barge *Good Service* has started operations on the Thames in the King's Reach, just below Westminster Bridge. Operated by R. G. Odell Ltd, as agents for Shell-Mex & B.P., Ltd., the station has been provided primarily for the convenience of operators of pleasure boats; but many private craft have already taken advantage of the station's facilities.

Diesel fuel is dispensed through two electrically-operated kerbside-type pumps. In addition, the barge carries two small deck tanks, which provide T.V.O. vaporising oil through hand-operated pumps. Smaller quantities of paraffin for navigation lights, lamps, cooking and cleaning, and a full range of marine lubricants are also available.

FIGURES issued by the Tyne Improvement Commission show that, during May, shipments of coal and coke (including bunkers) from the river totalled 787,790 tons, a decrease of 54,209 tons on last year and 207,792 tons less than in 1938. For the first five months of the year shipments were 3,614,756 tons, which is 472,944 tons or 11.6 per cent less than in 1950 and 1,751,470 tons or 32.6 per cent below the figures of 1938. Shipments to foreign ports were 428,561 tons, against 966,945 tons last year.

Other figures presented to the Commission show that more oil fuel and petroleum spirit are being imported into the Tyne. For the first five months of the year receipts of oil fuel were 220,534 tons, an increase of 47,470 tons, while imports of petroleum spirit at 44,361 tons for the same period showed a rise of 12,358 tons.

A FRENCH subsidiary of the Shell Group, Compagnie Fluviale et Maritime de Transports de Pétroles, recently changed its name to Société Maritime Shell. The concern has taken charge of the activities hitherto carried out by the marine department of Shell Française, i.e. the maritime transport of mineral oil products handled by the latter company. In the main, these services comprise the carriage of crude oil to be supplied to the Shell Française refineries at Petit-Couronne (Le Havre), Pauillac (Bordeaux) and particularly Berre (to the west of Marseilles), the latter operated by Compagnie de Raffinage Shell Berre, a Shell Française subsidiary.

## OFFICIAL NOTICES

### New Company

F. MORLAND & CO., LTD.—Regd. June 12. 26, Exchange Street East, Liverpool, 2. To carry on business of shipping agents, shipbrokers and forwarding agents, etc. Nominal capital £5,000 in £1 shares. Directors: F. Morland, 39, Poulton Road, Spital, Cheshire; J. E. Jones, Warren House, Thurstaston, Wirral, Cheshire; E. R. Jones, Crossways, Warren Road, Liverpool, 23.

Information from *Jordan's Daily Register of New Companies.*

### New Directors of Glasgow Firm

MR. JAMES GILCHRIST has been appointed vice-chairman of Barclay, Curle & Co., Ltd., the Glasgow shipbuilders and engineers, and three new directors have been appointed to the board. They are Mr. James B. McNee, who is assistant to the general manager at the North British Engine Works, Mr. Norval M. Lindsay, secretary of the firm, and Mr. Walter H. McLay, assistant general manager at the Clydeholm shipyard.

Mr. Gilchrist served his apprenticeship with the North British Engine Works and completed his training with Barclay, Curle & Co., Ltd., having rejoined the North British Engine Works in 1929 as assistant manager, after seagoing experience with the City Line. He became general manager in 1934, having been appointed to the board the previous year. He is also a director of Swan, Hunter & Wigham Richardson, Ltd., and the Wallsend Slipway & Engineering Co., Ltd. He is a member of the Clyde Navigation Trust and of several professional and technical associations. Mr. McNee began with Barclay, Curle & Co., Ltd., as an apprentice in 1903, and he has been at the North British Engine Works since 1913 as designer, chief draughtsman and technical manager before reaching his present position. Mr. Lindsay, a chartered accountant, became the firm's chief accountant in 1914 and secretary in 1942. Mr. McLay started with the firm in 1912, becoming chief draughtsman in 1927 and assistant general manager in 1942. He is a member of the executive committee of the Clyde Shipbuilders' Association, and a member of the Institution of Naval Architects.

IN August 1947 the first vessel ever to be propelled at sea, by a gas turbine, successfully completed its initial trials for the Royal Navy. This craft powered by a 2,500 SHP Metrovick Gas Turbine has since undergone full scale endurance trials including an extensive tour of Scandinavian ports in 1949. These trials have amply demonstrated the suitability of the gas turbine for small craft where high speeds may be required for limited periods and at short notice. Metropolitan-Vickers have employed all the wide engineering experience at their disposal both in the designing and building of this type of power unit, fully realising the widening field of this great advance in propulsion since the advent of the internal combustion engine.

## METROVICK GAS TURBINES

## MTB 5559*

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*The gas turbine propelled M.T.B. 5559 was formerly the M.G.B. 2009 and the photograph above shows her standing off the Houses of Parliament. The lower photograph was taken during the vessel's first sea trials.*

METROPOLITAN-VICKERS ELECTRICAL COMPANY LIMITED, TRAFFORD PARK, MANCHESTER, 17
*Member of the A.E.I. group of companies*

METROVICK *Makers of fine marine machinery*

J101

# DANISH SHIPPING AND SHIPBUILDING

## NEW TRADE AGREEMENTS : RAW MATERIALS FOR SHIPBUILDING

**By THE SHIPPING WORLD'S Own Correspondent**

SINCE the American authorities prevented the Polish liner *Batory* from calling at New York there have been a great many rumours as to what the owners intend doing with the ship. One of the strongest is that the East Asiatic Company of Copenhagen is interested in buying the vessel and opening the route under the Danish flag. It has even been reported that the East Asiatic Company has bid Kr.50 mn. for the *Batory*, but that the Poles demand Kr.65 mn. In an interview with a Copenhagen paper the chief of the East Asiatic Company's shipping department, Mr. Hakon Christiansen, stated that no negotiations were taking place for the taking over of the *Batory*. The East Asiatic Company has for the time being taken the *Erria* off her usual route and put her on the Copenhagen/New York run. He went on to say that certain negotiations were presently taking place with regard to a new line, but could not disclose any further details at present.

A Danish-Finnish trade agreement has been signed whereby Denmark will import goods to the value of Kr.290 mn. and export to Finland Kr.250 mn. The main imports are 24,300 tons of pulpwood, 7,000 cu. m. of veneer, 75,000 standards of wood, 6,000 tons of woodpulp and 26,000 tons of newsprint. The main export goods are 2,500 tons of butter, 5,000 tons of sugar, textiles to the value of Kr.13 mn., and machinery worth Kr.50 mn. On June 5 a trade agreement between Portugal and Denmark was signed in Lisbon. The value of the exports from Portugal amounts to Kr.64 mn. and includes 8,000 tons of copra, 1,000 tons of palm kernels, 10,000 tons of oilcake, 5,000 tons of maize, 5,000 tons of bran and 1,000 tons of fishmeal. The Danish export consists mainly of diesel engines, medical goods, seed potatoes, cement machines and a number of other special machines.

Through Marshall Aid, Denmark has bought 300,000 tons of coal from the United States. The Marshall Aid authorities have supplied tonnage for the shipment of 150,000 tons in American bottoms at the new W.S.A. rate of $11.30. The remaining 150,000 tons have not yet been fixed, as importers are not allowed to pay more than the sterling equivalent of $12.40, and so far no owners have shown any interest either for single or consecutive voyages. A part cargo of 3,000 tons has, however, been taken at this rate by a Wilhelmsen vessel. Negotiations are taking place to find a solution to the problem and it is understood that the Americans have offered to take the remaining quantity at $11.30 in American tonnage.

### Notable Anniversaries

On May 29 Mr. Henrik V. Jacobsen, managing director of the East Asiatic Company of Copenhagen, celebrated his 40 years jubilee. Mr. Jacobsen received his first commercial training with the old firm of Vilh. Nielsen in Odense. After serving his apprenticeship he went to Hamburg, Paris and London before joining the East Asiatic Company in 1911. He began as assistant at the company's agency at Harbin. In 1917 he became leader of the company's Manchurian agencies and in addition was Danish Consul for Manchuria for about 10 years. After 19 years in the Far East he returned to Denmark in 1930 and became a director in 1932.

On June 1 Mr. J. A. Korbing, administrative director of the United Steamship Company of Copenhagen, completed 30 years as a director. Never before in the history of the company has any person held the position of director for so long a period. Mr. Korbing went through the engineering school of the Naval Yard at Copenhagen from 1903 to 1907. From 1908 to 1910 he went to the technical high school at Charlottenburg but returned to the Naval Yard, where he became yard engineer in 1912 and sub-manager in 1919. In 1921, at the age of 35, Mr. Korbing received the offer from the United Steamship Company to join the company as technical director. In 1934, on the death of Mr. A. O. Andersen, Mr. Korbing took over as adminstrative director. This was during a difficult period for the company, and as an old shipbuilder it was only natural that Mr. Korbing specially concentrated on renewing the fleet. During the Second World War the company lost many vessels but Mr. Korbing stuck to his plans and continued the rebuilding during the war. That the company today has a systematically renewed fleet is due to Mr. Korbing.

The Copenhagen shipowner, Mr. A. P. Moller, intends to build an oil refinery in the port of Copenhagen. Mr. A. P. Moller has made it known that the board of directors of the Steamship Companies "Svendborg" and "1912" have in principle agreed to the plans. The plan is to treat 100,000/120,000 tons of oil a year. The cost of putting the refinery into operation is estimated at about 24 million Danish Kroner.

On May 19 Lindholmens Varv, at Gothenburg, launched a 16,300 tons motor tanker building for C. K. Hansen of Copenhagen. The vessel is a sister ship to the *Nerma Dan*, recently delivered to J. Lauritzen of Copenhagen by the same yard. Her main machinery, which consists of a 9-cylinder Sulzer diesel of 6,300 e.h.p., will give the vessel a speed of about 15 knots fully laden. She will be delivered about early August and is fixed on time charter for five years. On May 24 Burmeister & Wain launched the motorship *Benny Skou* for Mr. Ove Skou, of Copenhagen. She is an open shelterdecker of about 6,850 tons deadweight with a capacity of about 425,000 cu. ft. Her main engine is a single-acting 8-cyl. two-stroke B. & W. crosshead diesel, producing 8,700 i.h.p. at 125 r.p.m. and giving a speed of 17 knots on loaded trials.

### Steel for Scandinavian Shipbuilding

At a lunch which followed the launching, the yard's administrative director, Mr. C. A. Moller, made a speech during which he said, addressing Mr. Skou: "You are the first Danish shipowner who in my time has ordered four new ships at Burmeister & Wain, who were previously mainly inclined towards export. Before the war we sold three-quarters of our production abroad. Under present conditions export becomes more and more difficult owing to discrimination. A ship with Danish engines cannot be registered under the American flag; even England does not allow Danish engines in English newbuildings for English owners. We therefore do our utmost to build the very best ships for our countrymen and the standard demanded by Danish owners today in regard to technical and hygienic arrangements, as well as crew accommodation, is higher than usually demanded by foreign owners." Later in his speech Mr. C. A. Moller said: "Last week I was in Sweden and I was surprised to see the Swedish industry's wealth in raw materials. Such wealth can never be reached here without a Scandinavian customs and trade union. A strong industry cannot be self-supporting in raw materials without sub-contractors who are able to deliver the goods. In my opinion it is of no use to dream about a large European market but indeed of sensible cooperation between the Scandinavian countries. Such cooperation will be necessary if in the long run Scandinavia is to assert herself." At the end of his speech Mr. C. A. Moller announced that Mr. Ove Skou a few days earlier had ordered a further ship from Burmeister & Wain.

Two directors at Burmeister & Wain's shipyard at Copenhagen, Mr. C. A. Moller and Mr. G. Dithmer, have decided to retire and they will be replaced by the

present sub-manager, Mr. J. Barfoed, and the manager, Mr. Niels Munck. Mr. Barfoed is 36 and came to Burmeister & Wain in 1939. After a short while he went to the Naval Yard, where he became chief of the drawing office in 1942. He returned to Burmeister & Wain in 1943 and became chief of the construction department in 1948, chief engineer in 1949 and sub-manager in 1950. Mr. Munck, who is 48, joined Burmeister & Wain in 1927, where he has been sub-manager of the sales department and manager since 1948.

Svendborg Skibsværft launched the 1,565 tons gross steamer *Lily Nielsen* on May 26 for the Progress Steamship Company of Copenhagen. She is a sister ship to the *Else Nielsen*, delivered by the same yard earlier this year. She is a completely Danish ship. The steel was delivered by the Danish steel rolling mill at Frederiksværk, the engine by Helsingor Skibsværft and the winches by the firm of Christola in Esbjerg. Since the war the Progress Company has had several ships built by Svendborg Skibsværft but the manager, Mr. Hans Rasmussen, stated that they will not be ordering more ships for the time being. The hull of a new ship would today cost the same as the *Lily Nielsen* fully completed. Furthermore the shipyards cover themselves against rises in prices, so that it is impossible to foretell the eventual cost price. The diesel tug building at Solvesborg Varv for the United Towing Company of Copenhagen has been launched and named *Frode*.

The Icelandic steamer *Fjällfoss*, 2,060 tons d.w., built in 1919, has been sold to Italian buyers. The Liberty ship *St. Croix*, belonging to the East Asiatic Company of Copenhagen, has been sold to Panama buyers for just over one million dollars. The steamship *Taarnholm*, 2,495 tons d.w. built 1905, has been sold by the United Steamship Company of Copenhagen to Italian buyers for about £30,000.

## COMMONWEALTH SHIPPING COMMITTEE

### Hudson Bay Marine Insurance Rates

IN ACCORDANCE with its terms of reference, the Commonwealth Shipping Committee has again given consideration to the question of marine insurance rates on vessels entering Hudson Bay, and its report, the tenth on this subject, is now published. Since 1939, aids to navigation and knowledge of conditions on the route have much improved. The use of the gyro compass, which is not subject to magnetic variations has become general, and radar has been proved capable of revealing shore lines, other shipping, ice formations above the surface, and floating objects. In addition, existing aids (visual, sound, and radio) have been maintained and improved. Furthermore the Canadian Government vessels have continued to contribute valuable assistance to shipping.

From 1931, when the route first opened, and until the close of the 1950 season 147 ocean-going vessels have loaded and sailed from Port Churchill. The postwar figure of 76 vessels shows that the traffic using the route has increased and in fact the 1950 figure of 20 vessels is the highest ever.

The evidence the Committee has collected about conditions in the Hudson Strait and Bay during the 1950 season of navigation has, as has been the practice during the previous years, been brought to the notice of the underwriters to assist them in their review of the position for the forthcoming season. In an appendix to the report is recorded the evidence collected from some of the masters trading to Port Churchill during the 1950 season of navigation. At the request of the Committee the Canadian Government has given consideration to a number of recommendations made by these masters, and, as a result, on May 26, 1951, the Deputy Minister of Transport, Ottawa, advised the Committee as follows:—

(1) Two new Canadian Hydrographic Charts, Nos. 5000—Hudson Bay and Strait, and 5450—Hudson Strait, have been published and copies will be issued, free of charge, to approved users on application to Canada House, Trafalgar Square, London, S.W.1.

(2) The Royal Canadian Air Force has instructed captains of all aircraft flying in these areas to report the position of ice fields and ice pack. Such reports will be relayed through the surface patrol vessel *N.B. McLean*, and Department of Transport radio stations located at Churchill, Resolution Island and Cape Hopes Advance.

## "Shell" Transport & Trading Co.

### Sir Frederick Godber's Speech

THE annual general meeting of the "Shell" Transport & Trading Co., Ltd., was held on June 28 at Winchester House, Old Broad Street, London, E.C., Sir Frederick Godber, chairman and joint managing director, said:—

This year I have not much to add to my statement circulated with the report, but I am sure you will agree with me that it would be inappropriate if I did not pay a tribute to my colleague, Sir George Legh-Jones, who, as mentioned in my statement, has expressed the wish to relinquish his position as an active managing director of the group at the end of this month. However, as I have already informed you, he will continue as a managing director of your company and remain on the board of the main subsidiary companies, and we are very glad that we shall thus be able still to have the benefit of his vast experience of the group's affairs.

It will be my pleasure presently to propose the re-election of Sir Robert Waley Cohen as a director of your company, but I would like here to refer to the great services which he has rendered to the company and to the group over the 50 years in which he has been associated with these companies. For the greater part of those years I have been connected with Sir Robert in one capacity or another, and a more pleasant association I could not have desired. Sir Robert's experience has been of immense value to your interests, and with the years his energies have not flagged. You will, I am sure, wish to make this not only the occasion of unanimously re-electing him to the board when the resolution is put, but also of allowing me on your behalf to express to him your great appreciation of the services which he has rendered.

#### Group Accounts

A new feature of the report this year has been the incorporation of group accounts comprising what is, in effect, a balance sheet and profit and loss account for the group. We have endeavoured to present these concisely and in a form which will be informative and of interest even to those of you who do not pretend to technical accounting knowledge. The group accounts should be regarded as a complete consolidation of the group figures. I emphasise "of the group" because the consolidation does not include the Royal Dutch or your company. These are the owners of the group, each having its own independent resources which cannot properly be included as group resources.

For reasons explained in my published statement, the group's holding in some 22 companies, being those in which there is an outside public interest, have been treated as group investments. We have also treated as investments certain companies of the Continent and in the Far East. For many of these latter companies no accounts are available. For the rest, however, the assets and liabilities and trading results of some 240 active companies have been analysed and aggregated to form the group picture.

You will appreciate that these group accounts are not drawn up under the United Kingdom Companies Act, or indeed under the Companies Act of any other country, and that we have felt free to present them on the lines most appropriate to the peculiar circumstances of our own case, always provided, however, that, to quote the audit certificate "they constitute a fair and reasonable presentation."

The report and accounts were unanimously adopted and the retiring directors were re-elected.

#### Vote of Thanks

Lt.-Col. The Hon. Lord Teviot proposed a cordial vote of thanks to the chairman, directors and staff at home and abroad for the outstanding services rendered to the company during the past year and for the magnificent results which had been presented.

# THE INTERNATIONAL CONFERENCE

## PAPERS READ AT THE LONDON MEETINGS OF NAVAL ARCHITECTS AND MARINE ENGINEERS

EIGHT PAPERS were read at the London meetings of the International Conference arranged by the Institution of Naval Architects, Institute of Marine Engineers, Institution of Engineers and Shipbuilders in Scotland and North-East Coast Institution of Engineers and Shipbuilders. Abstracts from the first paper, "Ships' Structures—A Century of Progress," by R. B. Shepheard, were given in last week's issue of THE SHIPPING WORLD. It provides an invaluable record of the progress in ship construction since 1851. Papers of this kind, which are historical as well as technical in character, must always occupy an important place in the transactions of a technical society as it is only with proper appreciation of what has gone before that members can properly develop their ideas for the future. Mr. Shepheard most successfully fulfilled his objective, a difficult task in view of the many important developments during the past century. The transition from iron to steel, the development of water ballast tanks, the various stages of the construction adopted for hull and bulkhead construction, and perhaps even more important the effects of these and other changes upon the factor which the shipowner looks on as probably the most important result, the deadweight-displacement ratio, were all dealt with in the clear and informative manner which one has come to expect in papers read by the present Chief Ship Surveyor for Lloyd's Register.

### The "Lucy Ashton" Trials

Great interest centred in the paper read by Sir Maurice E. Denny on the resistance experiments carried out by the British Shipbuilding Research Association on the *Lucy Ashton*. This paper is the first part of the report on these important experiments and deals with the full scale resistance tests made with this former Clyde paddle steamer. Though some results were given by Sir Maurice in order to demonstrate the quality and accuracy of the experimental observations, details showing the correlation between full scale resistance with that of models tested in tanks will be published at some future time. Measurements of the hull resistance of the *Lucy Ashton* over a wide range of speeds were attempted with the fundamental aim of securing information for the comparison of ship resistance with the resistance predicted from model tests. The full-scale programme has been largely carried out. In conjunction with this, comparable tests are being carried out on a series of geometrically similar models in an experimental tank. There will be six model sizes in all, ranging in length from 9 to 30 ft. The requirement of the full scale experiments was to arrange for a force of the order of 5½ tons in order that the ship should attain a speed of about 15 knots. There are many possible methods of measuring the resistance of a towed hull. The provision of craft capable of heavy tows at high speeds raises many difficulties, and the dynamometer necessary on board the towed vessel calls for the onerous and conflicting requirements of robustness, accuracy and sensitivity. The effect of the slip stream shed from a towing vessel required that this vessel should not be directly ahead of the towed vessel. This condition called for an outrigger and at even moderate speeds the design of a suitable outrigger presented formidable problems. Another possibility was to tow the ship in line with a towing ship on a very long tow, as was used by Admiral Hiraga in the case of the Japanese destroyer *Yudachi;* but this method was subject to the same doubts and manœuvring difficulties as the outrigger method referred to above. Propulsion by means of airscrews was possible, but the highly periodic thrust developed by an airscrew was difficult to record accurately.

On the other hand, an aircraft jet engine gave a steady thrust which was easily and rapidly altered by comparatively simple controls. With jet engines mounted beyond the vessel's beam at such a distance as to preclude impingement of gases discharged from the jet pipe on any part of the hull or impingement on the water in its immediate vicinity, the thrusts recorded on these jet engines gave an accurate assessment of the hull resistance. These were important advantages, and the main disadvantages were solely the high fuel consumption and the noise emission. It was therefore decided to propel the ship by means of four Rolls Royce Derwent V jet engines which, it was estimated, would provide the thrust necessary to propel the ship at speeds up to about 15 knots.

The trials emphasised the importance of the effect of the condition of the hull surface on the resistance. In this connection, and using the resistance of the clean, naked hull with sharp seams and red oxide paint as the basis of comparison, the preliminary results showed that:—

(*a*) Fairing the seams reduced the total resistance by about 3 per cent.

(*b*) When the hull was painted with bituminous aluminium paint the total resistance was reduced by about 3½ per cent, which was equivalent to about 5 per cent on the estimated skin frictional resistance.

(*c*) When the seams were faired and the hull painted with bituminous aluminium paint the total resistance was reduced by about 6 per cent.

The improvement in resistance with the aluminium paint surface was borne out by roughness measurements, which have shown this surface to be smoother than that of the red oxide paint. Trials run with the naked hull with a bituminous aluminium paint surface after the ship had been laid up for 40 days showed that the total resistance had been increased by about 3½ per cent. On the basis of estimated skin frictional resistance this amounted to about 5 per cent. Subsequent docking showed that there was no evidence of

(*Continued on page* 12)

### INTERNATIONAL CONFERENCE OF NAVAL ARCHITECTS AND MARINE ENGINEERS

DELEGATES from 14 countries are attending the International Conference of Naval Architects and Marine Engineers in London, Glasgow and Newcastle-upon-Tyne. The conference has been arranged jointly by the Institution of Naval Architects, the Institute of Marine Engineers, the Institution of Engineers and Shipbuilders in Scotland, and the North-East Coast Institution of Engineers and Shipbuilders. The conference was opened on June 26 at the Central Hall, Westminster, by the Lord Mayor of London. Viscount Runciman, president-elect of the I.N.A., presided in the absence through ill health of Viscount Cunningham. On the previous evening, overseas delegates were entertained at a reception given by Lloyd's Register of Shipping, the guests being received by Sir Ronald and Lady Garrett and Mr. and Mrs. A. E. M. Gale.

Dr. S. F. Dorey, president of the Institute of Marine Engineers, presided at a luncheon held at the Connaught Rooms on the first day of the conference, and a Government reception was held at Lancaster House in the evening, delegates being received by the First Lord of the Admiralty and Lady Packenham. On Wednesday, the conference was entertained to luncheon at the National Maritime Museum, Greenwich, by the Shipbuilding Conference, and a reception at the Mansion House was given by the Lord Mayor of London in the evening. On Friday a banquet was held at Grosvenor House. At this banquet, honorary membership of the Institution of Naval Architects and the Institute of Marine Engineers, was presented to Vice-Admiral E. L. Cochrane, U.S. Maritime Administrator.

*Monthly Light Alloys Section*

# INSPECTION OF THE "DIANA II"

## LIGHT ALLOYS AFTER 20 YEARS' SERVICE

THE *Diana II* is one of the earliest examples of all aluminium alloy ship construction. Though she was completed in August 1931, nearly 20 years ago, and has seen varied and at times very arduous service, it was seen at an inspection of this vessel arranged last week by the Aluminium Development Association that the light metals had more than justified the expectations of the owner, designer and supplier of the aluminium alloys used. Corrosion and erosion were negligible, the hull plating in particular being still in first-class condition.

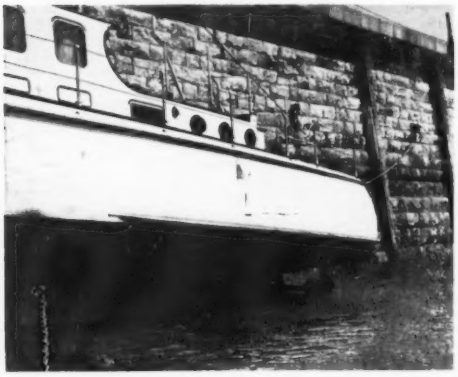
The *Diana II* was built in Southampton to the order of Col. Donald Van den Bergh and to designs by Mr. Chris. Simpson. The leading particulars are as follows:

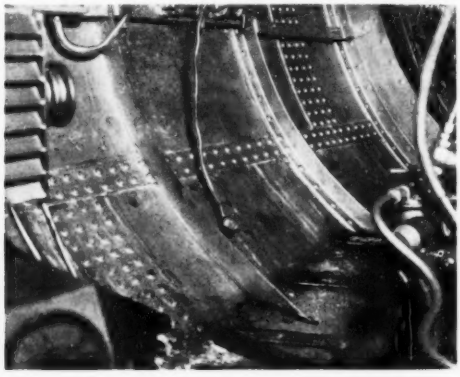
| | |
|---|---|
| Length between perpendiculars | 55 ft. |
| Breadth moulded | 12 ft. |
| Depth moulded | 6 ft. 3 in. |
| Draught extreme | 3 ft. |
| Displacement | 10.5 tons |
| Registered tonnage, net | 16.15 tons |
| Speed, in service | 20 knots |

This was the first vessel built in the aluminium-magnesium-manganese light alloys developed by Birmetals, Ltd., for marine purposes, "Birmabright" being used for the stem, keel and transverse frames (these being extruded sections), and for the plating, all rivets, superstructure, fuel and water tanks, signal mast, dinghy davit, dinghy, and various deck and interior fittings and controls. Even the stranded wire rope for the deck rails, the screws, nails and roves are of the same material. The only important materials used in the vessel, apart from aluminium alloys, are teak for deck covering, mahogany for panelling, lockers and furniture, bronze for the two propellers and stainless steel for the propeller shafts.

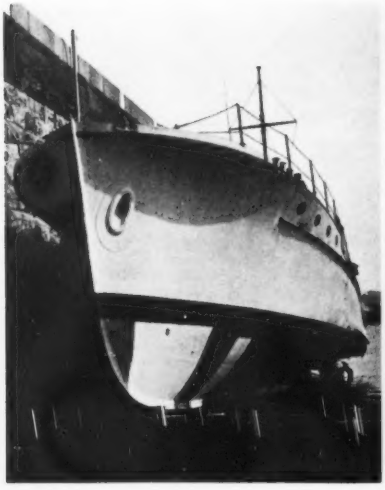
It was estimated at the time of construction that to obtain the same strength in steel, a hull of similar dimensions would need to be 35 to 40 per cent heavier than the aluminium alloy hull, while if built in teak the extra weight would have been 22 to 28 per cent.

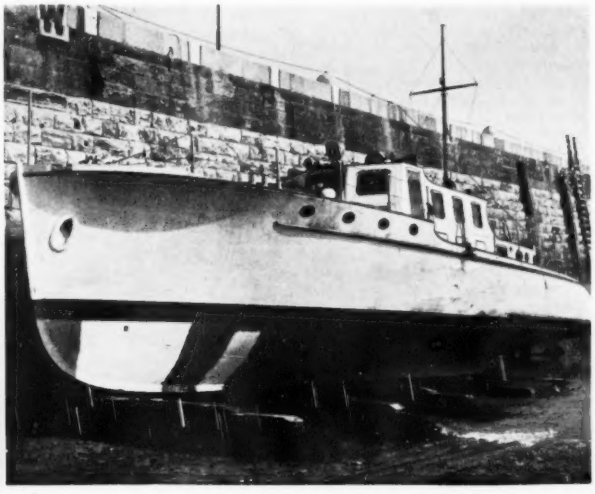
The original paint system on the exterior of the hull





**Views of the "Diana II," of light alloy construction, after 20 years' service**





# About Aluminium . . . 3

## HEAT TREATMENT

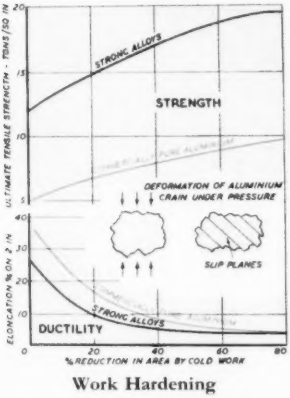
**In this series of articles, the student will find the broad outlines of the technology of aluminium. No completeness is claimed for these notes, but it is hoped that they may provide an introduction to the characteristics of this important structural metal.**

AS applied to aluminium and its alloys, the term "heat treatment" usually implies those processes, more specifically called *solution treatment* and *precipitation treatment*, by which the mechanical properties of certain alloys may be improved.

With these should logically be considered *annealing*, which has the effect of softening all forms of aluminium, and is often necessary, during fabrication, to remove the effect of work-hardening as a prelude to further cold-forming operations. This is the only thermal treatment applied to the simpler work-hardening type of aluminium alloy, and may well be described first.

### Annealing

Aluminium, like other metals, has a structure of innumerable crystals or grains. Cold working, as in rolling or drawing, distorts this structure; the individual grains are deformed, movement taking place along slip planes, and there is as a consequence an increased resistance of the metal as a whole to further deformation. It is then said to be *strain-* or *work-hardened*, and this state is permanent at ordinary temperatures.




**Work Hardening**

If the metal is heated, some relief of the internal stresses begins; this is *recovery*. As the temperature rises, the distorted original grains disappear and new grains grow to form a stress-free system. This *recrystallisation* brings the metal to its softest state.

These effects depend on time as well as temperature; so that the change may be completed quickly, it is usual to heat in air at a much higher temperature (340 C to 450 C) than the minimum necessary for recrystallisation. Apart from convenience, this is done to avoid the merging of crystals to form larger ones, which is encouraged by, among other factors, long heating time. *Grain growth*, as it is called, impairs mechanical properties and surface finish. Alloys that are especially prone to grain growth are sometimes annealed more rapidly in molten salts at about 500 C.

Annealing, which is normally carried out in electrical or gas-fired air furnaces, is used to make further cold working possible, and several anneals may be needed before the metal reaches its final shape. A variation is *partial-*, *back-*, or *temper-annealing*, where fully hard material of some compositions may be allowed to soften only to the intermediate degree of hardness, or temper, required.

### Solution Treatment

Certain metals, of which copper is the best example, are capable, in the solid state, of true solution in aluminium. The amount of such elements that the aluminium will accept is limited, but increases with temperature. If the temperature is lowered again, the excess proportion of the alloying element forms compounds, such as $CuAl_2$, which are deposited within the grains, and on their quantity, and more especially on their size, depends the resistance of the structure to deformation and hence the mechanical properties of the alloy.

*Solution treatment*, sometimes called *normalising* (from a faulty analogy with steel metallurgy) or simply "heat-treatment", is a process by which this phenomenon is exploited. The temperature is raised to about 500 C, usually in a bath of molten sodium nitrate, until the alloying elements are taken fully into solid solution. The alloy is then cooled, by quenching in water, too quickly for the dissolved elements to be precipitated; the solution remains supersaturated and the metal is temporarily soft. This condition is unstable and precipitation gradually takes place in the form of extremely fine particles. This small particle size (about 1/10,000,000 in. dia.) enhances the tenacity of the metal, which is then said to have *age-hardened* or *aged*.

Refrigeration is sometimes used to delay precipitation from the supersaturated state. In rivets, for example, the soft, formable condition that prevails for an hour or so after solution treatment may be maintained for about twenty hours, if need be, by storing at a low temperature.

### Precipitation Treatment

In some alloys, the spontaneous ageing process just described is complete after a few days at room temperature. A greater degree of precipitation and hardening than occurs naturally is, in certain alloys, induced by heating to about 170 C for ten hours or so (time and temperature depending on the composition). This is called *precipitation treatment* or *artificial ageing*. Excess treatment, either in temperature or time, causes undesirable growth of the precipitated particles, reducing their effectiveness in strengthening the metal.

### Temper Designation

The condition of an alloy is conveniently indicated by a symbol placed after its specification number. The system adopted by the British Standards Institution is as follows:

M — *as manufactured, with no heat treatment and without regard to work-hardening.*

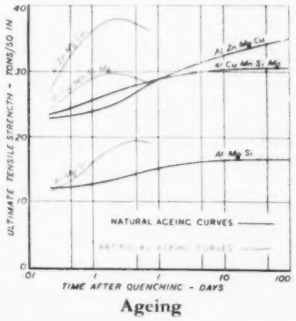
O — *annealed, soft.*

$\frac{1}{4}$H, $\frac{1}{2}$H, $\frac{3}{4}$H or H, — *the degree of work-hardening resulting from rolling or drawing.*

W — *solution heat treated.*

P — *precipitation heat treated (artificially aged).*

T — *solution heat treated and naturally aged.*




**Ageing**

*The fourth article in this series will be concerned with tensile properties.*

***Monthly Light Alloys Section***

consisted of an undercoating of oil varnish base filled with zinc oxide, followed by coatings of best varnish enamel. There was no surface treatment to secure adhesion, although today the hull would be washed down first with caustic soda. Despite the absence of this precaution adhesion has been perfectly satisfactory and there has been no blistering at any part of the hull as far as can be seen; the clean appearance may be noted from the accompanying photographs. A zinc oxide filler was used to cover rivets and points. Inside the hull, an undercoating filled with zinc oxide white was followed by a varnish enamel pigmented with aluminium.

It was, of course, impossible to make a thorough examination, but sections of cabin floors were lifted to give access to the bilges, and it was possible to see the structure in the engine room. It was noted that there appeared to be no evidence of corrosion, and the edges to the butt straps looked to be as clean and sharp as the day they were sheared. This is all the more remarkable when compared with the probable state of a steel structure after a similar period where plate and plate edges usually show distinct signs of wastage.

Naval architects and others interested in applications of aluminium to ships should see for themselves the way in which this material resists corrosion. It is also to be hoped that the vessel will be made available for inspection when slipped so that the underwater hull and castings can be examined. We were informed that she had recently been slipped for survey, and it was found that no serious attack had taken place whatsoever. It is common knowledge that corrosion in small steel craft is a serious problem, and indeed they are often galvanised to lessen the effect of such attack. In spite of this, corrosion does take place, which invariably necessitates replacement of hull plates, and sometimes frames, within eight to ten years. This has been shown to be the case with steel lifeboats in spite of the fact that they are often well maintained during their service. The condition of the *Diana II* is therefore convincing proof that an aluminium lifeboat can well be expected to last the life of the parent vessel.

This does not take into consideration the important fact that one-half of the weight of the structure has been saved by employing aluminium, and for craft of this size at least it would appear that the long-term advantages much more than outweigh the extra initial expenditure for the more expensive material.

It was explained at the inspection that the *Diana II* had since seen varied service on behalf of the Admiralty during 1939-45, while at different periods during the past 20 years the vessel had been neglected and poorly maintained from time to time. The *Diana II* has recently been acquired by the British Aluminium Co., Ltd.

## A New 60-ft. Light Alloy Launch

Based on the standard 26-ft. *Seahawk* hull developed by Grimston Astor, Ltd., of Bideford, the twin-screw motor cabin launch *Tania* has been built by this company for Lord Brantisfield and has been designed principally for fishing off the Irish coast. The launch has been designed primarily for day use but is equipped to make occasional night passages. Propulsion is by means of two Parsons Ford 10 motors, which are fitted with Silentbloc flexible couplings. The motors are rubber mounted within sound-insulated castings, the controls being led to the wheel position in the cabin. A portable tiller is also provided to permit steering from the cockpit in fine weather when fishing single handed. The launch has the hull form associated with the builder's name and has a cabin with streamlined shape sweeping down at the sides to cockpit level at the cabin sides. The accommodation provides seating for four people in addition to the helmsman, while there is also a toilet compartment and oilskin hanging space. The engine castings in the cockpit are in the form of settees upholstered in waterproof materials. Direct drive gearboxes are controlled by hand levers which can be operated independently with one hand or together. On trials this launch had an average speed of 16 knots over the measured mile with a total power of 40 h.p. at 2,500 r.p.m.

## BRITISH MANUFACTURE OF "MARINITE"

### Formation of a Joint American and British Company

A RECEPTION was held in London on Thursday, at which many delegates to the International Conference of Naval Architects and Marine Engineers attended on the occasion of the formation of a new company, Marinite, Ltd. It will be owned jointly by the Cape Asbestos Co., Ltd., of London, and by the Johns-Manville International Corporation of America, for the purpose, subject only to the satisfactory assessment of the sales potential, of investing a substantial sum in providing a new industry for the United Kingdom, producing materials intended primarily for shipbuilding. Marinite, Ltd., will be a British company, operated by British people and financed largely by British capital, but will have available the resources of the Johns-Manville research organisation. It is only after many years of successful marketing of Marinite to shipbuilders and shipowners on the American Continent that the Johns-Manville International Corporation, wishing to expand the use of this material in ship construction in the United Kingdom as well as in Norway, Sweden, Denmark, Holland, France and Italy, in Spain and in Portugal and Finland, has arranged to enter into partnership with the Cape Asbestos Company to manufacture the material in Britain.

Marinite was developed some 15 years ago in the research laboratories of the Johns-Manville Corporation and then made available to the shipbuilding industry. Following the burning, off the New Jersey Coast, of the passenger liner *Morro Castle*, in 1934 the United States Government delegated to various bodies the task of developing stringent safety regulations for passenger vessels. It was found that Marinite was perfectly suited to meet the high standards which were found to be necessary and which were eventually demanded by the authorities concerned. It is interesting to note that there are today over 20 mn. sq. ft. of this fireproof joiner bulkhead material, which is inorganic and completely incombustible, in service. The material is a pressed asbestos board weighing about 35 lb. per cu. ft. Manufacturing processes are such that it can be produced in sheet form of various sizes and thicknesses. From a shipyard point of view it can be readily cut and fitted with standard shipyard tools.

#### Properties of Marinite

Marinite can be either painted or wood-veneered, Formica-faced, aluminum or steel-faced. In fact the majority of choices can be satisfied. It can also be faced with a marine veneer, which is a cement and asbestos composition, with a very hard grey marbilised surface. Obviously a facing of this kind saves maintenance costs because it eliminates painting. The marine veneer faces can also be waxed. As a small detail, Marinite has excellent screw-holding powers.

Another important point about it is its insulation value within the limits required by safety regulations; for example, if one side of a $\frac{3}{4}$-in. thick panel is exposed to a temperature of 1,700 deg. F., heat is not conducted through it even to the extent of igniting paper held in direct contact with the other side. Ships today embody joinery work which it is considered highly desirable should be fireproof, attractive according to competitive requirements of passengers, and durable according to high maintenance costs. Official regulations have approved the use of materials to provide an incombustible barrier to fire passage. If the diversity of fine finishes which are required in public rooms, for both passengers and crew, the latter to an increasing extent, and the demand for comfort and a freedom from irritating noises are to be met, and at the same time constructional requirements are to be followed, the shipyard requires materials which combine ample strength with minimum weight, immunity from vermin and mould, the latter particularly in ships trading in and to the tropics, moisture resistance, sufficient resistance to the passage of sound and high insulation value. It is claimed that Marinite meets these requirements.

Designed primarily for use as a divisional bulkhead, and ship-side lining and for fireproofing the underside of decking without supplementary insulation, Marinite also has an interesting record of application in passenger cabins, in public rooms, in pilot houses of tugs, in engine rooms, etc., and may be said in general to represent a new approach to the problem of insulation and incombustible interior finishing of the modern ship.

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The Union Steam Ship Company of New Zealand, Ltd., has issued a booklet which is a complete guide to the comprehensive services and agencies of the company. The fleet now comprises six passenger vessels totalling 34,753 tons gross, and 48 cargo vessels totalling 199,063 tons deadweight.

## THE INTERNATIONAL CONFERENCE

(*Continued from page 9*)

fouling apart from a thin coat of slime, and the increase in resistance was to be ascribed to this and to the deterioration of the paint surface. The results gave definite proof of the sensitivity of full-scale ship resistance to small roughness.

### Higher Steam Conditions

The paper "Higher Steam Conditions for Ships' Machinery" was read by M. L. Ireland, Jr., H. W. Semar and N. L. Mochel. In it the authors referred to steam conditions which require a consideration of the effects of temperature upon the long term properties of the materials used in the construction of ships' machinery. No new types of problems were introduced by advances in pressure above, say, 600 lb. per sq. in., although existing problems may be so accentuated that new solutions were required.

The major incentive for advances in steam conditions for commercial vessels was the prospect of a saving in fuel consumption. Certain classes of long haul deadweight carriers such as tankers and ore carriers could profit from a reduction in machinery weight as well as smaller bunker capacity, but only minor weight savings, if any, were to be expected from increased steam conditions. In the United States, for new construction of moderate to high power (9,000 s.h.p. per shaft and greater), few operators would seriously consider steam conditions less than 600 lb. per sq. in., 850 deg. F., whereas such conditions were exceptional before World War II. There were indications that a similar condition now applied to construction in the British Isles, though the combination most favoured appears to be 500 lb. per sq. in., 800 deg. F.

The paper is a most detailed treatment of the whole subject and includes notes on the selection of principal components, materials and working stresses for high temperatures, as well as dealing with all types of problems encountered in construction and fabrication. A further section is devoted to the important aspects of control equipment and operating problems. Further advances in power stations beyond the present top level of 2,500 lb. per sq. in. in boiler pressure and beyond 1,050 deg. F. steam temperature associated with a somewhat lower pressure appear to be likely in the near future. It was understood that units are now being built for 1,100 deg. F. operating temperature. Current U.S. marine practice was well illustrated by three supertanker designs now in operation. These designs indicated widely varying tendencies but the majority of postwar installations are at the 600 lb. per sq. in., 850 deg. F. level. A brief description was also available of one C-3 prototype cargo ship now under construction employing 850 lb. per sq. in. gauge and 900 deg. F. at the superheater outlet. Regarding the near future, U.S. merchant marine construction would mainly be limited to about 850 deg. F. due to the present critical shortage of chromium and its need for use in more vital defence equipment.

### Admiralty Tests on Turbines

A second paper dealing with modern steam installations, given by Captain (E) L. F. Ingram, and Captain (E) A. B. Peile, under the title "Boiler and Turbine Testing," described some of the tests carried out under Admiralty auspices. It was shown that as much thought was directed to the practical problems of operation and maintenance as to the more theoretical problems of economy of fuel and space. The tests described fell into four main categories, research testing, prototype testing, proof testing and component testing. While it was clear that time and money would be saved if trials of propulsion machinery could be carried out afloat without delaying the completion and handing over of the vessel, such trials are limited in their accuracy by wind and weather, draught, state of bottom and many other considerations. For this reason, most of the information in the paper had been derived from trials ashore. The principal resources available to the Admiralty were the Admiralty Fuel Experimental Station at Haslar, Pametrada, the Admiralty-Vickers Gearing Research Association, the Distilling Experimental Station at Portland, the Naval Wing of the National Gas Turbine Establishment, and the Admiralty Engineering Laboratory. The point was made by the authors, after detailing the many types of tests which have been carried out, that as machinery design advanced, the margins in design became less. Higher temperatures, higher speeds of rotation and higher stresses were employed and the effects of these factors became more and more difficult to predict, so that the need for rigorous testing to ensure reliability had become progressively greater. Though the cost of testing on the scale required was considerable—the *Daring* trials at Pametrada will cost about £100,000—the expense was well justified.

### Sulphur in Fuel Oil

The problems set by the sulphur content in fuel for use in boilers or in diesel engines received considerable attention in the paper on characteristics and development of naval fuel oils by M. Blancher, though it was stressed that the question which raised the most serious difficulties was that of pumping fuels at low temperatures. Investigations were proceeding to develop a method of thermal pre-treatment by means of which it was hoped to be able to determine a constant maximum pour-point. The author referred to the fact that in France some 85 per cent of the oil imports in 1951 were to come from the Middle East as compared with 45 per cent in 1938. Middle East oil was high sulphur-content fuel, so that the importing policy was opposed to the technical trend of limiting impurities. In short, the requirement of modern boilers for fuel as free as possible from impurities was difficult to justify in view of the fact that the interests of economic production lay in a reverse direction. The author referred to the use of boiler oils in diesel engines and said that he considered that this depended on the purity of the fuel used, the principal characteristics required being low ash and low sulphur contents. As the demand for gas oil and for light fuels would be increasingly difficult to satisfy it would be desirable for builders of diesel engines to make their equipment more flexible in regard to fuel requirements.

### Motion of Ships at Sea

Recent knowledge gained concerning the six oscillatory motions of ships at sea were reviewed in a paper entitled "Ship's Motions" read by John C. Niedermair, these motions being grouped as reduction of speed at sea, pitch, surge, heave, roll and directional stability. New experimental data were presented for the first three subjects which were correlated with recent theoretical findings. Specifically, the following conclusions from theoretical calculations were confirmed. (*a*) In regular waves the maximum pitching amplitudes did not necessarily occur at synchronism or at wave-lengths equal to the ship length. (*b*) Absolute motions were less at high than at low Froude numbers when the wave-length was moderate. (*c*) The maximum amplitudes of motions might be expected at high speeds in very long waves. A standard sea condition for inclusion in all rough water model testing was proposed, together with a formula for estimating average wave heights. The difficulties of full-scale testing were discussed and the need for both new facilities and more theoretical work in the field was emphasised. In general, the model experiments and the theory agreed. It was also probably safe to say that a ship suffering from the same regular seas that the theory and model experiments presupposed would behave similarly. It could not be said that the model tests fulfilled in every respect the original purpose of running them, for, in spite of some rather wide hull differences between individual models, all of the models behaved substantially alike. However, verification of

this very fact, confirming as it does the theoretical calculations, rendered these model tests well worth while.

### Research, Training and Cargo Ships

The paper given by Professor Ir. H. E. Jaeger and Ir. J. C. Arkenbout Schokker was undoubtedly one of the most interesting works presented at the London meetings, as it proposed a design for a combined research, training and cargo ship. The idea of a training ship was not new, and the authors recalled that before the war Germany, Denmark, Italy, Japan, and Belgium all had what were termed "school ships." These were all sailing ships however, whereas Dr. P. Maack, in 1935, and Dr. W. Dahlmann in 1942 had appealed for training ships which would provide opportunity for learning about more important things than splicing ropes and reefing sails. While the authors thought that training ships on more modern lines were certainly now required, they suggested that at the same time the ships should be designed and used also for research purposes. The proposal of a combined research and training ship which could also be used as a cargo carrier had been worked out by E. Vossnack, a student in the shipbuilding department of the Technical University of Delft and while that design proposed in the paper was not precisely the same, it closely resembled Mr. Vossnack's proposal. The authors proposed a vessel of 9,480 tons deadweight with a sea speed of 17 knots with diesel-electric machinery, placed aft, of 8,680 s.h.p. The amidships part of the ship where the machinery is normally placed in most cargo ships of this size had been reserved for experimental spaces. The fore part of the ship would be longitudinally framed and the after part transverse framed, with a gradual transition from one form to the other. Bulkheads would include those with welded stiffeners of different sections, and with bracket or lug attachment, while some corrugated bulkheads would be installed. Both riveted and welded beam knees would be used.

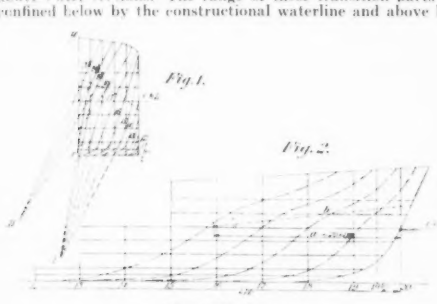
### Eriksbergs Shipyard

A fine record of great achievement from small beginnings was revealed in the paper read by N. G. Eckerbom, manager of the Eriksbergs shipyard in Gothenburg. Founded in 1853, almost 100 years ago, as a blacksmith's and galvanising shop which served sailing ships, Eriksbergs Mek. Verstad was today one of Sweden's largest shipyards, with an annual capacity of some 150,000 tons deadweight. Important extensions to the yard were made in 1915, while in 1938, land was acquired west of the original shipyard and laid out to take advantage of welded prefabrication. The author dealt with some of the new problems and accentuations of older problems which had arisen from the widespread use of welded construction and prefabrication in modern shipbuilding in this shipyard where these methods had been used to an increasing extent since 1936. The fact that prefabrication had been accepted so rapidly, in spite of the necessary heavy capital outlay and the radical change in general layout involved, might be the best evidence of the advantages this method offered. After a brief description of the modernised hull production department of the yard, the author discussed at some length the area required for this new type of production and dealt especially with the assembly area and the units storage area.

## RECENT TECHNICAL DEVELOPMENTS

### New Ship Form

The main object of this invention is to provide a ship form which affords a small resistance and economic propulsion in smooth water as well as in rough seas so that a high average speed of the ship is secured under all conditions. Referring to Figs. 1 and 2 the sections of the underwater construction of the ship's forebody extending over about 20 per cent of the total length of the ship to the region of the first wave hollow of the ship's wave system are determined by the direction of radii drawn from a common centre I. The radii from this centre determine the form of the underwater sections (with the exception of their roots) at least up to the waterline. Above this line they are continued by transition parts which connect the underwater sections with the more inclined above-water sections. The range of these transition parts is confined below by the constructional waterline and above by




New ship form

a straight line "b" which forms an angle $\alpha$ of about 7 deg. with the constructional waterline and intersects the latter at a distance of about 20 per cent of the total ship length from the stem.

The substantially straight frame sections of the upper works above the line "b" form a divergent angle of at least 25 deg. with the centreline xy, while all underwater sections (even the most inclined Nos. 16 and 17) have an essentially smaller divergent angle. The above-waterline sections or upper works may be determined by the direction of radii drawn from a common centre II. Preferably this centre II is situated further from the centreline xy, and closer to the bottom line xz, than centre I. The transition parts of the sections confined by the construction waterline and the line "b" need not necessarily be curved over their whole length but may also be composed of substantially straight portions, the divergent angle of which is considerably greater than that of the frame sections under water but smaller than that of the sections above.

Even if the underwater sections are very steeply arranged, the invention permits hydrodynamically satisfactory transitions to large above-waterline sections or upper work divergent angles, of e.g. 90 to 100 deg. Thus the forepart may be given an optimum form with regard to flow towards the screw, wake distribution, and propulsion.

*British Patent No. 653,656 issued to L. Costa and R. F. Maier. Complete specification published May 23, 1951.*

### Smiths "Desynn Rudder" Indicator

An ingenious rudder angle indicating system has been produced by Smiths Industrial Instruments, Ltd., which, although it operates off direct current, is self-aligning. "Desynn" is the name given by the company to the system of electrical transmission employed in the rudder indicator. The transmitter consists principally of a toroidal coil. Two brushes slide on the inside of this coil, held 180 degrees apart and rotated by a central shaft, which is controlled by the movement of the rudder. These brushes are connected to the positive and negative of a 24-volts D.C. supply. As the brushes rotate, the electric potential at any point on the coil will vary. At three points equally spaced around the coil, leads are connected, and these are taken to the field coils of the receiver, which are also spaced at equal angles, and connected in star. The movement of the transmitter rotor thus induces a rotating field in the receiver, and this is followed by the receiver rotor, which consists of a cylindrical magnet, mounted on a shaft carrying a pointer.

The transmitter is housed in a watertight casing, from which protrudes a lever arm which is intended to be jointed to the rudder head by a link. Two types of receiver are available: one has a circular dial face, and is probably best suited for the dashboard in small craft, while the other is a typical bulkhead instrument, with the equivalent of a 10 in. scale. This latter is fitted with a dimming light. The instrument can be supplied from a ship's battery, or from the mains through a resistance. The current consumption is about $\frac{1}{4}$ amp. All indicators are arranged so that the pointers move into a blank sector when a power failure occurs. Little maintenance is required.

# ROUND THE SHIPYARDS

## Work in Progress on the North-East Coast

**By THE SHIPPING WORLD'S Own Correspondent**

A REVIEW of new shipbuilding on the Tyne and Wear during the first half of 1951 reveals a satisfactory position. Providing there are no major difficulties over the steel supply problem, and freedom from labour disputes, indications are that on each river an increase on last year's output figures will result. On the Tyne a total of 19 ocean-going ships totalling 194,180 tons gross were launched during 1950, and for the first six months of this year ten vessels have left the stocks, totalling 107,640 tons gross. The present accent on tanker tonnage is shown by the fact that six of the ten ships launched are tankers, with a total tonnage of 74,860 tons gross. Three of these tankers (36,760 tons gross) are for Norwegian owners. The largest ship so far launched on the Tyne this year is the 18,200-tons gross *British Bulldog*, built by Swan, Hunter & Wigham Richardson, Ltd., for the British Tanker Co., Ltd.

On the Wear, tonnage output shows a big increase over the first six months of 1950. This year's figures are 16 vessels of 119,340 tons gross, against 18 ships of 83,190 tons gross. With several large ships due to leave the stocks during the second half of the year the 1950 total of 192,176 tons gross should be beaten. Included in this year's output are eight tankers of 74,550 tons gross, with the Norwegian tanker *Hoegh Eagle*, of 15,250 tons gross, the river's largest 1951 launching.

### Further Tyne Orders

June was a quiet month on the Tyne, with only one ship leaving the stocks. This was the 8,030 tons gross Port Line refrigerated cargo vessel *Port Townsville*, building by Swan, Hunter & Wigham Richardson, Ltd. At the same yard the 18,620-tons gross Anglo-Saxon tanker *Velletia* is advancing towards the launching stage, while another giant tanker, the 19,000-tons gross *British Talent*, is expected to be launched in the near future by R. & W. Hawthorn, Leslie & Co., Ltd. This is the biggest merchant ship ever to be built by the Hebburn firm. Orders for big tankers are still reaching the Tyne and Vickers-Armstrongs, Ltd., Walker-on-Tyne, have booked a contract for a 32,000-tons d.w. tanker for the Alvion Steamship Corporation of Panama, apart from an order from Jorgen & Jensen of Norway for a tanker of 24,250 tons gross. The Walker yard has sufficient orders on its books to keep the staff working for the next five years.

### Three Launchings at Sunderland

Three ships were launched at Sunderland during June. Two of these were a tanker of 11,400 tons gross for the Charlton Steamship Co., Ltd., from the yard of William Doxford & Sons, Ltd., and a tanker of 8,600 tons gross, the *British Maple*, building by Sir James Laing & Sons, Ltd. The third vessel, also a tanker of 9,200 tons gross, for the Athel Line, Ltd., is being constructed by J. L. Thompson & Sons, Ltd. All the yards on the Wear are busy and new contracts are still arriving to ensure work for the next four or five years. At the yard of William Doxford & Sons, Ltd., work has begun on two tankers each of 8,600 tons gross for the Overseas Tankship Corporation of New York. The two ships are part of an order for four similar vessels. For the same owners R. & W. Hawthorn, Leslie & Co., Ltd., will build three tankers each of 11,500 tons gross. Short Brothers, Ltd., who recently booked orders for four cargo ships each of 10,500 tons d.w. for Panamanian owners, apart from a cargo vessel of 9,250 tons d.w. for Norwegian owners and a 10,000-tons d.w. cargo ship from a Greek firm, have started work on the first of two cargo vessels of 8,600 tons d.w. for the Palm Line, Ltd. On the stocks at the yard of William Pickersgill & Sons, Ltd., are a French-owned collier of 5,600 tons gross and a cargo ship of 6,300 tons gross for Halden & Co., Ltd., as well as a 7,000-tons gross cargo vessel for the Lamport & Holt Line.

Shiprepairers in the area are becoming most anxious about the steel supply and already there have been difficulties in obtaining deliveries. Two repair contracts have been lost due to the steel position, and instead of the two ships being repaired on the Tyne Dutch yards will now carry out the work. A meeting has already been held between representatives of North-East Coast shipbuilding and repairing firms and representatives of Teesside steelmakers to discuss the question of supply. It is feared that unless some concrete proposals ensure that supplies of steel be delivered at short notice for shiprepairers, there is bound to be difficulty in giving guaranteed delivery dates to shipowners, and this may well result in further ships being sent abroad for repairs with consequent unemployment in local yards. It is felt that shipbuilders, too, should be guaranteed a flow of regular steel supplies so that delivery dates can be maintained.

The Middle Docks & Engineering Co., Ltd., South Shields, who will carry out the annual refits of the whaling factory ships *Southern Harvester* and *Southern Venturer*, have secured the contract for the overhaul of two American T-2 tankers. Palmers Hebburn Co., Ltd., will carry out the annual refit of the whaling factory ship *Balaena*.

### Gas Turbine for the "Auris"

Much interest will centre on the return to Hebburn of the Anglo-Saxon tanker *Auris*, which was built by R. & W. Hawthorn, Leslie & Co., Ltd., for the installation of a marine gas turbo-alternator. The *Auris*, which was completed three years ago, has at present four diesel alternators and the gas turbo-alternator will replace one of the four diesel units, working in conjunction with the other three diesel sets. The installation of the new alternator, which has been developed by Mr. John Lamb, head of the marine research division of the owners, in conjunction with the British Thomson-Houston Co., Ltd., will take about three months.

## New Italian Transatlantic Liner

The largest and fastest trans-Atlantic passenger liner to be built in Italy since the war has been launched from the Cantieri Ansaldo, at Genoa-Sestri, for the Italia Line. This is the turbine steamship *Andrea Doria*, of 25,000 tons gross, similar in size and appearance to the two motorships *Giulio Cesare* and *Augustus*. The motorships have a normal service speed of 23 knots, whereas the twin sets of steam turbines, totalling about 50,000 h.p., in the *Andrea Doria* will give a normal service speed of 25.3 knots. The vessel has an overall length of 214 m. (702.15 ft.), an extreme breadth of 28 m. (91.9 ft.) and a depth of 15 m. (49.2 ft.). She will carry 183 first-class, 320 cabin-class and 703 tourist passengers, in addition to a crew of 575. She is designed for the Italia Line's Genoa-New York service.

## The B.W.R.A. Summer School

A summer school for the study of Welding Design and Engineering was held by the British Welding Research Association at Ashorne Hill, near Leamington Spa, from May 25 to June 2 which was attended by 220 students, including representatives from Holland, Belgium and Norway. There were 34 lecturers drawn from industrial and academic spheres. The lectures included one "The Welding of Aluminium and its Alloys," given by Dr. E. G. West of the Aluminium Development Association, while a discussion on this subject under the chairmanship of Dr. West took place the same evening. Other lectures included "Argon and Aircomatic Welding" by P. T. Houldcroft, "Stress Analysis applied to Ships," by F. B. Bull, and "Application of Models and Photo-elasticity to the Design of Ships," by Dr. A. A. Wells, "Prefabrication and Automatic Welding in Shipbuilding," by R. Anscombe, "Radiography as applied in a Shipyard," by H. H. Hagen, "General Welding Problems in Shipbuilding," by D. M. Kerr, and "Design for Welding in Shipbuilding," by W. G. John and R. Cousland. A discussion on the factors retarding the application of welding to engineering construction took place under the chairmanship of Mr. R. B. Shepheard.

# PLASTICS IN SHIP CONSTRUCTION*

## A SURVEY OF PROGRESS ACHIEVED—AND FUTURE REQUIREMENTS

**By E. C. LEACH, F.R.I.B.A.**
**Decorative Architect, The Cunard Steam-Ship Co., Ltd.**

THE EXTENT to which continuing progress is made with plastics in ship construction may be judged from the following fact: that when the notes for this paper were first prepared, a list of articles was quickly and easily enumerated. But each time the notes were taken up, a few more were remembered, and now, not going into too great detail—for an item like 30,000 drawer pulls is omitted—the total mentioned in this paper is three or four times the first estimate. It is inevitable, therefore, that its form should be a mere catalogue, with comments on the merits and on the defects of the application of plastics in a high type of passenger liner. Some hints are given for further outlets for the industry.

### Wall Surfaces

The first example of wall surfacing is the 1-in. thick panel formed of two $\frac{1}{8}$-in. sheets joined by webs of 2-in. intervals. This was a boon when 1-in. plywood was scarce, and may still have a steady success ashore, but its use in ships has raised several unsolved difficulties, with the result that the more easily obtained plywood has checked its advance. Laminated sheets, $\frac{1}{4}$ in. to 5/16 in. thick, have been applied to existing surfaces—frequently bathrooms, hairdressing and beauty parlours—and retained in position either by metal or extruded plastics members with secret fixings. This system, by reason of the large number of bathrooms so treated, must be regarded as a success. The veneer thickness of laminated sheets, applied to $\frac{3}{8}$-in. thick plywood before erection, is also successful and lower in cost where circumstances allow this system.

These three methods, outlined in the above paragraphs, permit many variations in surface effect—textured, plain smooth coloured, printed paper, fabrics and marquetry embodiments. Interlocking plastics tiles of several types have been used. They were successful but high in cost. Plain surfaces suit the rather small ship bathrooms, and tiles have not been used much in postwar days.

The most economical way of providing a plastics surface is to line the space with hardboard, low-grade plywood or even chipboard, firmly screwed to grounds, and then, with the proper adhesive, stick on a fabric of woven extruded plastic yarn in the manner of paper hanging. Check designs are to be avoided as they are difficult to keep straight and they get untidy about sheer and camber lines.

As an alternative to painting in alleyways and staterooms, at a cost little different from high grade enamelling, a thin type of p.v.c. leather cloth has been fixed direct to the plywood bulkheading. When well carried out, it appears likely to last the life of the ship and save the cost of regular repainting. But there have been cases where the craftsmanship was not good enough: the material, after a year's wear, had to be stripped and the old repainting programme started off again. Sometimes the failure has been due to shrinkage of the material at the corners and at butt joints. Sprayed plastics on to steel plating and stanchions should, by now, be moving along, but inquiries have been disappointing. At this point may be mentioned the enormous mass of nameplates, direction signs and notices. Depending on their size and location, they may be engraved, inlaid or have printed paper lettering and illustrations incorporated in the plastics material itself.

### Table and Counter Tops

Plain colours, textures, designs on paper or fabric and real wood veneers—all have their place and are generally rendered blisterproof by the inclusion of an aluminium foil lamina just under the surface material. Five years of steady pressure has failed to produce a range of veneers equal to the American productions of the 1930s. This is the blankest of blank walls the buyer ever runs into. This is the one dead spot in a very live industry.

### Moulded Articles

The subject of moulded products in general, of course, includes the injection and compression processes and this is where quantities rise to the tens of thousands. Toilet fixtures above washbasins and baths, door furniture, light brackets and shades, thermos jug casings and holders, punkah louvres, telephones, hooks, W.C. equipment, are examples from a long list. None of these items is satisfactory when the bulk of material is small and dependent on strengthening ribs—as so many tearful children know with their broken, meanly moulded toys. Metal inserts and secret fixings must be accurate, robust and on a sound engineering basis. Surely it can at last be said that the day of impressed ornament is mercifully gone.

Failures, when they occur, are solely due to lack of bulk and so reluctant are manufacturers to admit this, that there has sometimes been a reversion to metal types on account of unwillingness to alter a mould. That hundreds of a stronger type would be bought, but no more of the mean one, seemed to have no effect whatsoever. The subject of coat-hangers is a particularly pungent example. In these postwar years, when timber is scarce and plastics are available, it never could have been right to make them of wood. Yet, for three years, every known manufacturer was begged to produce something. Then, out of the blue, from an unknown maker, came the almost perfect hanger at one-tenth of the cost of an inferior wood article. It immediately became standard for the fleet to the tune of tens of thousands. But this manufacturer's attention is drawn to the comments made above on "bulk": and why will he not assist our publicity by moulding in a word or a slogan—"Appreciated from Cunard," "Gone Ashore from Cunard" or, even, just "Cunard." It seems very strange.

### Covered Articles

Large quantities of hardwood storm rail of oval section are covered with an extruded plastics sleeve. Metal tubes are covered in the same way for curtain rods and both are successful, except for some cases of shrinkage and discoloration. Special handrail bends, wreathed ramps and non-standard brackets may need to be wrapped with sheet material and the covering welded. A sprayed plastics material, when it is satisfactory, will meet many of the difficulties which arise with non-standard articles.

### Fabrics

The transparent material, more familiar to us as ladies' raincoats, is used for shower bath curtains where the light fitting is, of course, not over the bath. A translucent version of this material, printed with a gay design, is used for the cubicles of beauty parlours and provides privacy without stuffiness. An opaque version is used for hospital curtains where there may be a need to exclude daylight. The stitching is still a little precarious; but, for the welding method, one is asked to pay quite a large sum for the anodes. Ordinary cretonne, impregnated with p.v.c. for a glazed chintz effect, but washable, has been used for restaurant chairs. After two years' heavy traffic the material is still sound, though the white has creamed; but in other locations, due to different conditions, there were some failures.

Fabrics have been successfully woven from a yarn of finely extruded plastics material and also from a fibre filament which is plastics covered. Designs appear to be limited to checks and plain colours, but the material is very suitable for upholstery in partially exposed positions. There is also a reference to this material under wall surfaces (above). Leathercloths, with a p.v.c. facing to a cotton back, have been preferred to the original leathercloth as reducing the fire hazard. There have been some failures due to staining and some types have an unpleasantly clammy touch.

### Extruded Material

An interesting use for $\frac{1}{4}$-in. diameter rod arose when the fine Palembang cane was no longer available for wicker furniture. There is a fair range of colours, but, so far, plastics materials have been used only for the weft. Staking and frames are still in cane and the wholly plastics model has yet to come. The inserts in metal strips along corridors for baggage protection are sometimes of flexible plastics material and are more colourful than the original rubber. There are upholstery bandings, back grooved to carry concealed tacks, but they are not yet quite successful for sharp

* Paper read at the British Plastics Exhibition and Convention on June 13th, 1951

or two-way bends. Stiff mouldings with secret fixings are referred to under wall surfaces (above).

### Floor Coverings

Using the word in its original sense, and not with its present-day limited connotation, linoleum made from oxidised linseed oil (with fillers of wood-flour, cork-dust and pigments) is still the most satisfactory plastic floor covering. Forty years' experience confirm that it is a good material for ships, and since half a dozen factories produce their own range of colours and marbled or jaspe effects, freedom in design is very wide. The material is 6 ft. wide and is easily cut into tiles, shapes and strips. It is taken on board in bulk and fitted to curved and irregular plans. So the manufacturers of material which includes synthetic resin and is only produced in tile form have yet some way to go.

### Cements

Synthetic resin adhesives of several types enable the plywood manufacturer to produce a much more reliable and a stiffer board than in the past. Being waterproof and fungus proof, the old difficulties of plywood blistering, shelling and becoming infected with dry rot, have now disappeared. Where contractors have the necessary type of press, resin adhesives are used, also, to face the plywood with decorative veneers. In a passenger liner where all the accommodation and part of the furniture is plywood built, the quantity of this form of adhesive would be great. The use of cold resin glues for joinery assembly on board has removed many difficulties and these glues now appear to supersede hide glues in ordinary factory practice.

### Hull Construction

Again thinking of the word "plastic" in its real sense, the evolution and adoption of latex rubber compounds has been one of the greatest gains to naval architecture in the last 20 years. As a sub-floor, applied directly to the steel deck, it has replaced the heavy and corrosive magnesite compounds and saved thousands of tons of useless weight. Used in this way it has also, incidentally, stopped the corrosion of deck plating, but, used as an inhibitor to electrolytic corrosion, it has had certain special application.

One form of latex rubber compound is used for the fairing of plate edges, seams and butts, where not only does it check corrosion, but by reducing skin friction, results in a saving of horsepower. The plastic paint does not yet seem to have arrived. Experiments have been carried out, and those in America were on a pretty large scale. But nothing has yet emerged to encourage the abandoning of known and well-tried materials.

### Marine Engineering

The low tensile strength of plastics and the low range of temperatures over which they retain character and form sets a limit to their use. The principal outlets in the marine engineering field appear to be insert sleeves for condenser tubes, bearings for tailshafts (instead of lignum vitae), bucket rings of water pumps, handwheels for valves and for more quietly running gearing pinion and wheel teeth.

### Electrical Equipment

P.v.c. covering for wires and cables is used where the wiring is away from high temperatures. All the items of plastics electrical equipment with which we are familiar ashore are equally suitable in ships. Switchplates and covers, light fittings, telephones, and, for fractional-horsepower motors, the whole of the casing. In motors of greater horsepower, terminal connection blocks, brush holders, etc., are of plastics materials.

### Future Requirements

Some suggestions for the industry and an indication of future requirements is given as follows.

1. A completely new system of moulding or injecting would free the buyer from the bogey of high mould costs. He would be inclined to use more plastics articles if he could be sure of chances to experiment and make adjustments in design.
2. A material that may be modelled by hand and then rendered inert—handled, in fact, like clay which is modelled, fired, glazed and fired again.
3. Finer yarns for fabric weaving to get past the limitation to check designs and a superfine yarn to twist for the carpet manufacturer.
4. More flexible upholstery bandings.
5. A free choice of veneers for table tops.
6. An adhesive for broken articles.
7. Better transparent material for tumblers, carafes, etc., instead of glass, and a fire resisting version for light fittings.
8. Sanitary ware with a glaze as good as a vitreous glaze on vitreous china.
9. Doors not fabricated, but completely moulded, including not only solid doors, but doors with their glazing bars.
10. Coffins: the consumption is not large, so encouragement must come from the undertaking business.
11. Surface hardening of clear transparent sheet with silvered back for mirrors.
12. The quantity of piping on a large ship is at least equal to that of a small town. Naval architects would welcome the saving in weight which a reliable and economical plastics piping system would give them.

If the representative of a very large buyer—whose figures in some years might well approach the £250,000 mark—were approached for a message for the plastics industry, it might, perhaps, run something like this: "You haven't really started yet."

## BOOK REVIEW

*Weltfahrt Eines Schiffbauers* (World Travels of a Naval Architect.) By Gustav Wrobbel. (Published by Wolfgang Krüger Verlag, Hamburg-Wellingböttel.)

This autobiography of a successful naval architect has the merit of a certain simplicity of style and frankness which does much to preserve the readability of a long and very detailed chronicle of the author's technical and commercial achievements. After obtaining his degree of Diploma Engineer in Danzig in 1911, Herr Wrobbel obtained his first post in Hamburg with Blohm & Voss at an initial salary of £7 per month. During the next few years he devoted himself in particular to the calculation of structural strength of merchant liners, and he participated in the design of the *Vaterland*, of 58,000 tons displacement. Subsequently joining the Hamburg America Line, the author soon found opportunity to convince his chiefs of his superior knowledge in the field of ships' stability. During World War I he was in the Zeppelin service, and after the termination of hostilities he took charge of the technical affairs of the Lobith Shipbuilding Company in Holland. In 1924 Wrobbel was offered the chair of Naval Architecture at the Technical College of Hamburg, and in 1936 he accepted a similar post at the Chinese University of Shanghai. World War II brought the author back to Europe, and during the German occupation of Norway, he was placed in charge of the naval yard at Trondheim. Living today in Hamburg in retirement, Herr Wrobbel's avowed purpose in publishing his memoirs is to stimulate the interest of the German youth of today in seafaring.

An invaluable handbook entitled "The Lubrication of Steam Turbines" has been produced by the Shell Petroleum Co., Ltd. Copies may be obtained from Shell-Mex and B.P., Ltd., Shell-Mex House, Strand, London, W.C.2.

## NEW RANGE OF BLACKSTONE ENGINES

(*Continued from opposite page*)

The completed cylinder block unit is lifted from the end of the line by a travelling gantry crane and lowered on to its bedplate, in which the crankshaft has previously been fitted. All final assembly work is completed, and the engine is then moved through to the next bay for test running. A notable feature of these engines is their attractive appearance. Black side panels of bakelite are fitted, and these, with green paint and polished copper piping, give a finish which may be of not inconsiderable assistance in export markets.

As the works is not connected to the electricity supply grid, it has its own power house, and the opportunity has been taken to use this as a show case in which the firm's engines may be seen working. One side of the power house has full length glass panels, and opens on to a lawn, on the far side of which is the road. The first line of engines inside the glass is a complete range of vertical engines, from the 2 to the 8-cylinder model. At present these are the older models, but they are to be replaced by the new range. In addition to its use for demonstration purposes, these engines are used to give instruction to foreign engineers. Among the other engines in the power house is the original experimental engine of the EV series. This is still running satisfactorily after nine years; it has only had one breakdown—for ten minutes on VE Night.

# NEW RANGE OF BLACKSTONE ENGINES

## LINE PRODUCTION METHODS AT STAMFORD WORKS

A NEW range of vertical diesel engines is now in full production at the Stamford works of Blackstone & Co., Ltd. These engines, known as the EV series, have replaced an older series of vertical engines. They are made in 2, 3, 4, 5, 6, and 8-cylinder versions in normally aspirated form, the 4, 6 and 8-cylinder models being also manufactured with a turbocharger. Although research and experimental work has been going on for some years (the first engine of the series began experimental running nine years ago), production has only recently been changed over from the older series, and an assembly line is now beginning to deliver engines steadily.

Blackstone & Co., Ltd., is a subsidiary company of R. A. Lister & Co., Ltd., having been bought by Lister's some years before the war. Previously Lister's had been associated with Ruston & Hornsby, Ltd., and when this association was terminated the purchase of the Blackstone works enabled Lister's to offer a wide range of powers. The range of Lister engines is of lower horsepower than Blackstone's: the upper end of the Lister range is 70 h.p., the Blackstone range being from 90 to 480 b.h.p.

With the exception of a certain number of engines for marine use, the whole output of the Blackstone works is exported. Delivery is now about eighteen months to two years. Although Blackstone's has been making vertical engines for many years, the demand for the older horizontal engines continues so strongly that the firm has had to continue their manufacture, and they still form quite a substantial part of the total output.

The chief particulars of the EV series are as follows:—

| | |
|---|---|
| Bore ... ... ... ... ... ... | 8½ in. |
| Stroke ... ... ... ... ... ... | 11½ in. |
| Speed ... ... ... ... ... ... | 600 r.p.m. |
| Compression ratio ... ... ... ... | 14 |
| Swept volume, per cylinder ... ... | 690 cu. in. |

The normally aspirated engines develop 45 h.p. per cylinder, and the turbocharged models 60 h.p. per cylinder. The aim of the designers was to produce an engine which would give greater output per cylinder than their previous model without increasing either the dimensions or the fuel consumption, and this has been achieved. The fuel consumption is .372 lb. per b.h.p. hour for the normally aspirated version, the figure being reduced to .365 for the turbocharged model.

Fuel injection is on the C.A.V. solid injection system. The piston heads have toroidal cavities, an innovation in Blackstone engines. Cylinders have detachable wet liners, these being finished by the Listard process of chrome hardening developed by Lister's. The liners are machined to an inside diameter .005 in. oversize. Chrome is then deposited until the diameter is .001 undersize, and the liner honed to size. This process leaves the cylinder liner with a very slightly porous surface, which aids the retention of oil.

Closed circuit cooling is employed throughout the range, the necessary pumps being driven from the crankshaft through a train of gearing. (The camshaft is also driven from this gear train, the only chain drive being that for the tachometer). In engines for land use, the sump is used as the lubricating oil tank, but the marine model has a dry sump, with a scavenger pump delivering to a separate tank. The primary water cooling system is filled with clean soft water, and this and the raw water are circulated by Drysdale centrifugal pumps. The raw water is drawn from the cooling tower and passed first to the oil heat exchanger and then to the water heat exchanger, ensuring that the oil receives the coolest water.

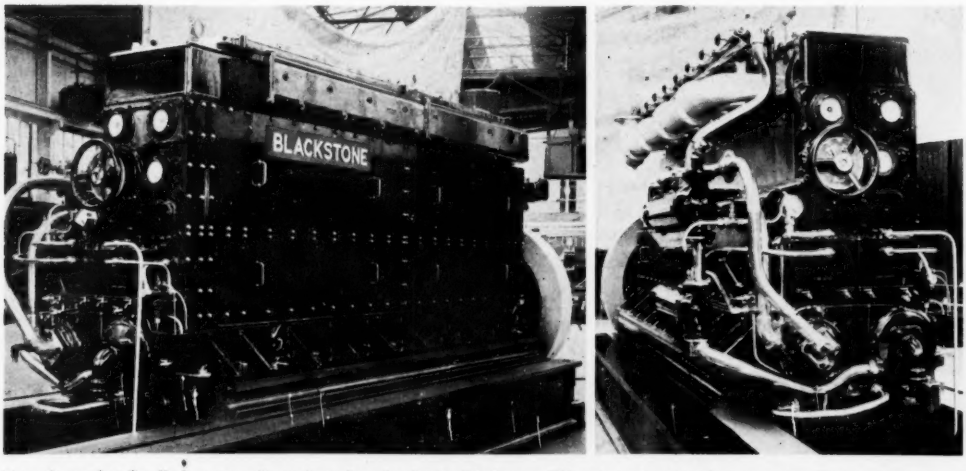
All controls, indicators and safety cut outs are grouped at the forward end of the engine. Starting is by compressed air on all cylinders, under control of the main handwheel. Fuel is automatically cut off and the engine thus stopped if the speed rises to more than 20 per cent above normal, or if the lubricating oil pressure falls below 10 p.s.i. The governor maintains the speed within 2½ per cent of normal.

The engine bed is a casting with ribbed mounting feet, of very rigid construction. Crankshaft bearings are supplied by the Glacier Metal Company. Any adjustment that is necessary to accommodate the crankshaft is made to the bedplate and not to the bearing, thus ensuring that all bearings are freely interchangeable.

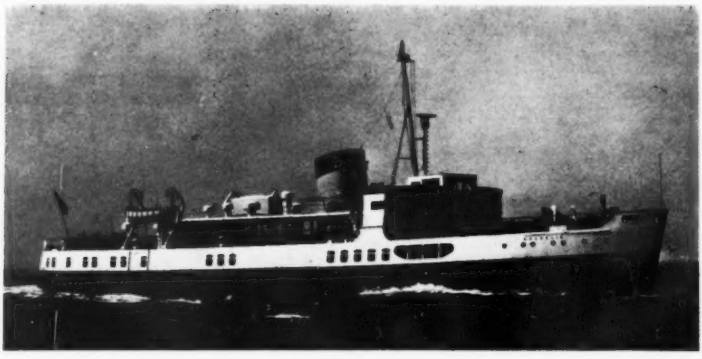
The turboblower which may be fitted to the 4, 6 and 8-cylinder engines is of the exhaust-driven type, and thus utilises energy which would otherwise be wasted. A number of different turboblowers were fitted to the early engines, but the Napier turbocharger has now been standardised for the range.

The EV series of engines is being produced at Blackstone's works by assembly line methods, which are proving very satisfactory. Machined cylinder blocks are placed on trolleys, which run on rails down the length of the assembly bay. Sub-assembly lines are arranged at right angles to the main line, and these terminate in racks from which the men working on the main line draw their parts. Opposite the end of the piston sub-assembly line the main line has a pit, in which a gadget for inserting pistons runs on rails. This machine was designed and constructed by Blackstone's, and enables the work to be performed very quickly.

(*Continued on opposite page*)




**Two views of an 8-cylinder normally aspirated engine in the Blackstone EV series, showing the controls. The two pumps at the bottom are for raw water (*right*) and engine water (*left*). In the right-hand view the oil cooler may be seen, with the water cooler above it**

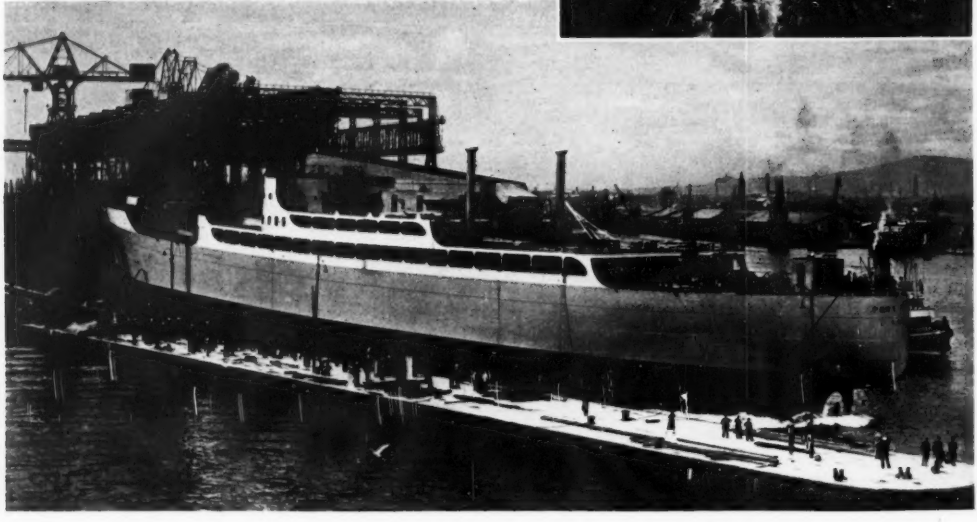


**Passenger Motorship "Shanklin"**

The twin-screw passenger motorship *Shanklin* has entered the Portsmouth-Ryde, Isle of Wight, service of the Southern Region of British Railways. Built by William Denny & Brothers, Ltd., the *Shanklin* is of 965 tons gross and has dimensions of 200 ft. length o.a., 195 ft. b.p., 46 ft. breadth moulded, 18 ft. depth moulded to promenade deck and 7 ft. draught. She is a sister ship of the *Brading* and *Southsea*, completed by Denny's in 1948, and has accommodation for 1,377 passengers. Her twin screws are driven by two 8-cylinder two-stroke Sulzer-type diesel engines, each of 950 b.h.p. The main engines have been supplied by the shipbuilders and provide the vessel with a service speed of 14½ knots.

**Two Liners Launched from Belfast**

Two liners, one a cargo motorship and the other a turbine-driven passenger vessel, were recently launched from the Belfast yard of Harland & Wolff, Ltd. The first vessel to enter the water was the cargo liner *Port Nelson* (*below*), christened on June 19 by Lady Corry, wife of Sir James Corry, director and secretary of the Port Line, Ltd., the owners of the ship. Of 8,150 tons gross, the *Port Nelson* has a length o.a. of 490 ft., b.p. 460 ft., breadth moulded 64 ft. 6 in. and a depth moulded to upper deck of 41 ft. 6 in. She is a single-screw vessel of the shelterdeck type. The five main cargo holds are arranged three forward and two aft of the machinery space, Nos. 2, 3 and 4 holds and tweendecks being insulated for the carriage of refrigerated cargoes. Five large cargo hatches are provided, served by two 15-ton, eight 10-ton and two 5-ton tubular wheel derricks together with one 3-ton and one 2-ton electric deck cranes. The propelling machinery is being supplied by the shipbuilders and comprises a 7-cylinder two-stroke single-acting B. & W.-type diesel engine. On June 21, Lady Mitchell, wife of Major General Sir Philip Mitchell, the Governor of Kenya, performed the launching ceremony of the twin-screw passenger liner *Kenya Castle* (*right*), building for the Union-Castle Mail Steamship Co., Ltd. The *Kenya Castle* is a sister ship of the *Rhodesia Castle*, launched from the same yard in April of this year, while a third ship of a similar type is under construction at Belfast and should be ready for service towards the end of 1952. Of 17,300 tons gross, the *Kenya Castle* is expected to enter the round Africa service of her owners early next year, sailing to Cape Town via the west coast and returning by way of the Suez Canal and the Mediterranean. Accommodation will be provided for 530 passengers in one-, two-, three- and four-berth cabins, all of one class. A number of the passengers' rooms will be fitted with private bathrooms or showers. The vessel has dimensions of 556.3 ft. length, 74.2 ft. breadth and 31.9 ft. depth. She will be propelled by six steam turbines double-reduction geared to twin shafts, the machinery being supplied by Harland & Wolff



# NEW CONTRACTS

## Yards in Great Britain and Northern Ireland

| Shipowners | No. of Ships | Type | Approximate Tonnages: Gross | Approximate Tonnages: Deadweight | Dimensions (ft.) | Speed (knots) | Propelling Machinery | Total h.p. | Engine Builders | Shipbuilders |
|---|---|---|---|---|---|---|---|---|---|---|
| A/S Rederiet Odfjell, Bergen | 1 | Cargo liner | — | 6,400 | 368 b.p. × 53.25 × 34.75 | 15 | Doxford diesel | 4,400 | Wilton-Fijenoord, Schiedam | Burntisland S.B. (sub-contracted to Hall, Russell) |
| Bowater's Newfoundland Pulp & Paper Mills, Corner Brook, N.F. | 2 | Cargo | — | 7,500 (each) | — | — | Steam turbine | — | — | Wm. Denny |
| British owners | 1 | Coaster | — | 1,350 | — | — | — | — | — | Jas. Lamont |
| Athel Line | 1 | Tanker | — | 10,300 | — | 13 | 4-cyl. Doxford diesel | — | Shipbuilders | R. & W. Hawthorn, Leslie |
| **Commonwealth and Foreign Yards** | | | | | | | | | | |
| Horn Linie, Hamburg | 1 | Cargo | 5,300 | 8,100 | 420 b.p. × 58.6 × 26.3 | 14.5 | Diesel | 4,900 | — | Deutsche Werft, Hamburg |
| Adolf Wiards, Bremen | 1 | Cargo | — | 2,800 | — | — | Diesel | — | — | A. G. Weser, Bremen |
| H. M. Gehrckens, Hamburg | 1 | Cargo | 500 | — | — | — | Diesel | — | — | D. W. Kremer Sohn, Elmshorn |
| John T. Essberger, Hamburg | 1 | Tanker | — | 575 | — | — | Diesel | — | — | D. W. Kremer Sohn |
| Brazilian owners | 1 | Tug | — | — | — | — | — | 270 | — | D. W. Kremer Sohn |
| United Baltic Corpn. | 3 | Cargo | — | 2,600 (each) | — | 16 | Sin.-scr. twin red. geared 4-str. diesels | 3,600 (each) | M.A.K. Masch. Kiel A.G. | Werft Nobiskrug G.m.b.H., Rendsburg |
| S.A. Italiana di Nav. Mercantile Villain & Fassio, Genoa | 1 | Refrig. cargo | — | — | 376.8 o.a. × 51.2 × 21.8 | 16.5 | M.A.N. diesel | — | — | H. C. Stulcken Sohn, Hamburg |
| Zurich owners | 2 | Cargo | — | 5,500 (each) | 350 × 52.8 × 33 | 16.5 | Diesel | — | — | H. C. Stulcken Sohn, Hamburg |
| Deutsche Hochsee-fischereiges. Nordsee, Bremerhaven | 1 | Trawler | 590 | — | — | 12 | Steam | 850 | — | Rickmers Werft, Bremerhaven |
| Johan M. Ugland, Grimstad | 1 | Cargo | — | 4,100 | — | 15 | Werkspoor diesel | 3,500 | — | Moss Vaerft og Dokk |
| A/S J. Ludwig Mowinckels Rederi, Bergen | 1 | Cargo liner | — | 6,100 | 480 b.p. × 53.25 × 25 | 14.5 | B. & W. diesel | 4,000 | — | Moss Vaerft og Dokk |
| Franz Haniel & Cie., Duisburg | 1 | Cargo | 1,400 | — | — | — | Tw.-scr. diesel | 1,600 | — | Gutehoffnung-shutte A.G., Walsum/Rhine |
| Peruvian owners | 2 | Tugs | — | — | 85.3 × 22.3 | — | Diesel | — | — | D.W. Kremer Sohn, Elmshorn |
| Ludvig Braathen, Oslo | 1 | Tanker | — | 29,500 | — | — | — | — | — | Gotaverken, Gothenburg |
| Ofotens Damps., Narvik | 1 | Passenger | 600 | — | — | 13 | Polar diesel | — | — | Drammen Slip og Verksted |
| Sun Oil Co. | 2 | Tankers | — | 30,000 (each) | 615 (long) | 16.5 | — | — | — | Sun S.B. & D.D. Co., Chester, Pa. |

# LAUNCHES

## Yards in Great Britain and Northern Ireland

| Date | Shipowners | Ship's Name and/or Yard No. | Type | Approximate Tonnages: Gross | Approximate Tonnages: Deadweight | Dimensions (ft.) | Speed (knots) | Propelling Machinery | Total h.p. | Engine Builders | Shipbuilders |
|---|---|---|---|---|---|---|---|---|---|---|---|
| June 7 | James W. Cook & Co. | *Drake, C.* | Tank barge | — | — | 82.5 × 14.5 × 7 | — | Lister diesel | 63 | — | Richard Dunston, Thorne |
| June 19 | Rea Towing Co. | *Bangarth* (740) | Tug | 231 | — | — | — | Steam | — | — | Alex. Hall |
| June 19 | British Tanker Co. | *British Maple** (792) | Tanker | 8,580 | 12,160 | 490 o.a. and 463.46 × 61.75 × 34.08 | 11.5 | Sin.-scr., 4-cyl., 2-str. Doxford diesel | — | N.E. Marine | Sir James Laing |
| June 21 | National Sea Products | *Cape Brier* (1371) | Trawler | 365 | — | 137 b.p. × 26.5 × 13.75 | — | Tr.-exp. steam | 700 | Amos & Smith | Cochrane & Sons |
| June 21 | Anglo-Saxon | *Genota* (1214) | Tanker | 5,924 | — | 405.83 b.p. × 62.5 × 21.5 | 12 | Tw.-scr. tr.-exp. steam | — | Shipbuilders | Smith's Dock |
| June 21 | Port Line | *Port Townsville* (1809) | Refrig. & gen. cargo liner | 7,500 | 10,700 | 460 b.p. × 64.5 × 41.52 | 15.5 | Sin.-scr., 6-cyl. 2-str. Doxford diesel | 7,500 | Wallsend Slipway & Eng. Co. | Swan, Hunter & Wigham Richardson, Wallsend |
| June 22 | Scottish Home Dept. | *Brenda* (1453) | Fishery patrol vessel | 340 | — | 189.5 o.a. × 26 × 11.5 | — | Tw.-scr. diesel | — | British Polar Engines | Wm. Denny |
| June 25 | British India S.N. Co. | *Chakdara* (722) | Cargo liner | 9,000 | — | 485 × 62.5 × 40.75 | — | Sin.-scr., 6-cyl. Doxford diesel | 6,800 | Shipbuilders | Barclay, Curle |
| June 26 | Regent Oil Co. | *Regent Lark* | Oil barge | — | 140 | — | 8 | Diesel | — | Ruston & Hornsby | W. J. Yarwood & Co. |

* The *British Maple* was previously reported in *THE SHIPPING WORLD* as having been launched on May 23

# TRIAL TRIPS

## Yards in Great Britain and Northern Ireland

| Date | Shipowners | Ship's Name and/or Yard No. | Type | Approximate Tonnages: Gross | Approximate Tonnages: Deadweight | Dimensions (ft.) | Speed (knots) | Propelling Machinery | Total h.p. | Engine Builders | Shipbuilders |
|---|---|---|---|---|---|---|---|---|---|---|---|
| June — | Ribble Nav. & Preston Docks Board | *Hewitt* (412) | Tug | 130 | — | 92 o.a. × 23 × 11.5 | — | Tw.-scr., 6-cyl., 2-str. diesel | 800 | Crossley Bros. | Henry Robb |
| June — | Union S.S. Co. of N.Z. | *Waimate* (398) | Cargo | 3,500 | 5,200 | 325 b.p. × 50 × 27 | 12 | Sin.-scr., tw. sin.-red. geared 8-cyl. diesels | — | British Polar Engines | Henry Robb |
| June 20 | British Tanker Co. | *British Viscount* (1878) | Tanker | 8,570 | 12,167 | 490 o.a. and 463.46 b.p. × 61.75 × 34.08 | 11.5 | Sin.-scr., 4-cyl. Doxford diesel | 3,100 | Shipbuilders | Swan, Hunter & Wigham Richardson, Walker |
| June 20 | A/S Hav and A/S Havtank, Oslo | *Stavik* (1799) | Tanker | 8,842 | 13,575 | 465 b.p. × 63.5 × 36.25 | 12.25 | Sin.-scr., 4-cyl., 2-str. Doxford diesel | 3,750 | Wallsend Slipway & Eng. Co. | Swan, Hunter & Wigham Richardson, Wallsend |

# MARITIME NEWS IN BRIEF

**From Correspondents at Home and Overseas**

CAPT. H. J. CAVILL, general labour superintendent of the Shipping Federation, has retired on reaching the age of 65. In presenting a gold wrist watch to Capt. Cavill on behalf of the chief office staff, the general manager of the Federation (Mr. Richard Snedden) said that although Capt. Cavill's services covered many departments of the Federation's work, his services were perhaps most outstanding in the field of training. Capt. Cavill was wounded in the Gallipoli landings, and became shipping intelligence officer at Queenstown and later at Liverpool. He was awarded the O.B.E. for his war services. In 1920 he joined the Federation staff at the chief office as assistant general labour superintendent and was promoted to general labour superintendent in 1926.

SIR CHARLES LILLICRAP, Director of Naval Construction, is to retire at the end of September. He will be succeeded by Mr. V. G. Shepheard. Sir Charles was appointed Director in 1944. Mr. Shepheard, who was born in 1893, was appointed Assistant Director of Naval Construction in 1942, and in 1947 became Deputy Director of Naval Construction.

LIEUT.-COMMANDER JAMES ANDREW has been appointed assistant harbour-master by Southampton Harbour Board, with which he has served since 1946. Lieut.-Commander Andrew spent ten years at sea with the Ellerman City Line and during the war held commands in the Northern patrol and Pacific Fleet.

MR. CHARLES REYNOLDS has retired as chief accountant of the Cunard Steam Ship Co., Ltd. Mr. Reynolds joined the Cunard Line in 1906 and was appointed chief accountant in 1944. He is succeeded by Mr. G. H. Newsam.

FOR reasons of health, Mr. W. J. Havelock relinquished his full time executive responsibilities in Walter Runciman & Co., Ltd., at the end of June, 1951, after over 50 years service. He retains his seat on the board.

* * * *

THE Tyne Tugowners' Association has applied for an increase of 22 per cent in the existing maximum towing rates to meet higher costs. Negotiations are at present proceeding between the Association and the Tyne Shipbuilders' and Shiprepairers' Associations and the Shipowners' Association concerning the increase. The Tyne Improvement Commission has decided to approve the increase subject to the production of figures supporting the application, an agreement being reached between the tugowners, shipbuilders, shipowners and repairers, and the approval of the Ministry of Transport.

AN EXAMPLE of quick dispatch occurred at Port Talbot Docks on June 21. The steamer *Kylefirth* arrived at 6.40 a.m. and began loading at 8.0 a.m. This was completed by 6.15 p.m., the vessel sailing at 7.15 p.m. the same day. The loading of 2,584 tons of small coal was carried out in the actual working time of 8½ hours—an average shipment rate of 304 tons an hour.

MR. P. R. MURRAY, assistant manager, Royal Mail Lines, Ltd., retired on June 30. Mr. Murray joined the Royal Mail Steam Packet Company in May, 1907, as assistant purser, and after considerable sea service was transferred to the Provedore Department, London, in 1919. He later became Provedore Superintendent at Southampton, head of the Provedore Department in London in 1937, and was appointed an assistant manager in January, 1945.

THE United States Lines flagship *America* is to extend her trans-Atlantic voyages to Bremerhaven, beginning with the eastbound sailings from New York on October 23. She will continue to terminate her eastbound voyages at Bremerhaven until April, 1952. The inclusion of Bremerhaven does not effect calls at Channel ports.

THE Italian liner service to the Far East is to be resumed in July by the Lloyd Triestino. The 13,000-tons liners *Sebastiano Caboto* and *Ugolino Vivaldi* will maintain the service. The *Sebastiano Caboto* is due to sail from Genoa for Hong Kong on July 20.

DR. NICOL GROSS has been appointed assistant director of research of the British Welding Research Association. Dr. Gross will continue his responsibility for the Association's engineering researches and will remain in charge of the Research Station at Abington.

R. & W. HAWTHORN, LESLIE & CO., LTD., have been granted permission by the Tyne Improvement Commission to erect a 15-tons derrick crane at their St. Peter's Works, Newcastle, to replace the 50-tons sheerlegs erected 80 years ago.

* * * *

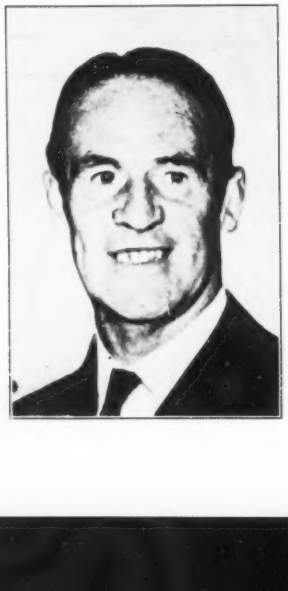
A SHIP-SHORE radio telephone service has been opened at Aden by Cable & Wireless, Ltd., It will be operated between 9.30 and 10.30 a.m. and 3 and 4 p.m., Aden time. The service will be operated with the Aden Government telephone system. In addition, the company, by arrangement with the Government of Aden, has taken over two wireless stations on the Red Sea island of Kamaran.

TENDERS have been accepted by Bartram & Sons, Ltd., Sunderland, for the work in extending their shipyard to enable it to build vessels up to 16,000 tons. The civil engineering work will be done by J. G. Thompson & Sons, Ltd., South Shields, while North-East Metal Fabrications, Ltd., Sunderland, are to do the structural steelwork.

THE INCREASE in harbour dues sanctioned by the Swedish Board of Trade for the port of Gothenburg came into effect on July 1. The new rates for ships and cargo are 75 per cent above the basic rates for foreign-going ships, and 40 per cent for the coasting trade. The previous rate was 50 and 25 per cent above the basic rates.

FOLLOWING a recent degree issued by the Federal Government in Belgrade, the headquarters of the Yugoslav Register of Shipping, the Yugoslav national classification society established in June 1949, was transferred early in June from Rijeka to Split.

CAPTAIN D. R. PATERSON is to retire after 36 years with the Shell tanker fleet, of which 23 years were spent in New Zealand waters as master of the *Paua*, 1,280 tons d.w., a record of continuous command believed to be unique.



ADMIRAL LORD MOUNTEVANS has been appointed chairman of Parsons Engineering Co., Ltd. Lord Mountevans went on two voyages to the Antarctic, and in 1910 was second in command of Capt. Scott's expedition. During the First World War he earned the title of "Evans of the Broke" in defeating six German destroyers while in command of H.M.S. *Broke*. In 1939 he was appointed London Regional Defence Commissioner, but later went to Norway on liaison work. On his escape from Norway he returned to England to continue his London defence work

MR. D. F. ANDERSON, chairman of the British Shipping Federation, is the newly elected chairman of the International Shipping Federation in succession to Mr. Basil Sanderson. Mr. Anderson is deputy chairman of the Peninsular & Oriental Steam Navigation Company and the British India Steam Navigation Co., Ltd. He is also a director of James Nourse, Ltd., National Provincial Bank, Ltd., The Bank of Australasia and the Aberdeen & Commonwealth Line, Ltd.

### SITUATIONS VACANT

ADMIRALTY.—Temporary Assistant Material Overseers experienced in all shipbuilding techniques are required for temporary service in the Material Overseeing Service of the Naval Construction Department, Admiralty. Vacancies exist at London, Glasgow, Southampton and Sheffield and further vacancies are expected to occur in other towns. Candidates must be British subjects of 21 years of age and upwards, who have had practical workshop experience and, preferably, an apprenticeship. Salary will be assessed according to age, qualifications and experience on a range with a London maximum of £675 per annum. For candidates of 30 years of age salary will normally be related directly to age, *i.e.*, £570 per annum (London) and for younger candidates will be approximately £20 per annum less than the age 30 rate for each year of age they are under 30. The London rates are reduced by £10 to £15 per annum at intermediate centres such as Belfast, Glasgow, Manchester and Newcastle, and by from £20 to £30 per annum at other towns in the provinces.

Applications, stating age, details of technical qualifications and of apprenticeship (or equivalent) and of workshop experience should be sent to the Admiralty, Empire Hotel (C.E.H. Room 83), Bath. Candidates will be interviewed locally, if considered suitable, as soon as possible after receipt of their applications.

LONDON MISSIONARY SOCIETY requires First Officer with Certificate of Rank or Superior Certificate for service on their M.V. "John Williams VI" (418 tons) in the Pacific. Write for particulars of appointment to 42, Broadway, London, S.W.1.

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